

PROVISIONAL ATLAS

OF THE

INSECTS OF THE BRITISH ISLES

General editor John HEATH

Part 4

SIPHONAPTERA

Fleas

Edited by

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Huntingdon.

1974

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INTRODUCTION

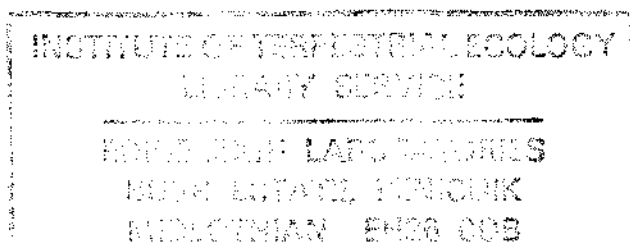
The extent of the British flea fauna depends partly upon the breadth and species content of the indigenous mammal and bird fauna, partly upon the normal increment to that fauna by the natural accession of new host species bringing with them new fleas, partly by existing immigrant species introducing new fleas, partly upon the introduction of new hosts by man. The British list of fleas comprises those species recognised by Smit (1957) and the additions of Usher (1968), Stebbing (1970) and Dunnet (1971). Of this list I now:

- (a) remove: Echidnophaga gallinacea (Westwood) for which we have but a single record. It is a tropical species. There has been no evidence, and there is little likelihood, of it breeding here, Xenopsylla brasiliensis (Baker) for which there is only one record. It is a tropical species which does not appear to be able to establish itself even in dock areas.
- (b) consider possibly doubtful: Chaetopsylla t. trichosa Kohaut which has been recorded once on a Scottish badger. As there is a considerable movement of badgers by zealous conservationists and this traffic certainly has included introductions to Scotland we must consider the possibility of this flea having a continental origin.
- (c) accept provisionally: Ischnopsyllus variabilis Wagner though there is only one record. The host also was an addition to the British list but there is little possibility of it having been introduced by man and it could well be in the process of becoming established on the south coast.
- (d) accept the following introductions of long residence because they have been able to establish themselves in the wild (except perhaps Xenopsylla cheopis, but this species has been with us for as long as bubonic plague has):

Xenopsylla cheopis (Rothschild) introduced on rats,
Tarsopsylla o. octodecimdentata (Kolenata) introduced on red squirrels,
Orchopeas h. howardi (Baker) introduced on grey squirrels,
Nosopsyllus londiniensis (Rothschild) introduced, probably, on house mice,
Leptopsylla segnis (Schönherr) possibly introduced on house mice though it may be indigenous,
Spilopsyllus cuniculi (Dale) introduced on rabbits post-Norman Conquest.
However in the Department of Geology of Cambridge University there are tentative thoughts that the rabbit may have a much earlier history in Great Britain.

- (e) and add: Ctenophthalmus b. bisectodentatus Kolenati which occurs in the Channel Islands. These islands are part of the Continental zoogeographical area which is not recognised as part of the British Isles by Smit but is accepted within the terms of this Atlas.

The intermediate forms produced between Ceratophyllus garei and C. borealis, of C. gallinae with other bird fleas and between the two Nosopsyllus species have been left for consideration in another edition.



The three new species have been included on a single map (No. 60).

I have incorporated those records which have come to me either from material or lists sent to me by my many correspondents or from literature which has come to my notice up to 31st May, 1974.

I acknowledge the help of the very many people who have sent me specimens and especially the assistance, support and advice of Dr. Miriam Rothschild, F.G.A.M. Smit, G.B. Thompson, the Librarians of the Institute of Animal Physiology, Babraham and the Royal Entomological Society of London and the financial aid of the Royal Society.

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R.S. George

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HOST LIST

This list only refers to the normal, or true, hosts as observed in the British Isles. It omits the many hosts upon which fleas may exist quite reasonably as alternatives to the true hosts and also omits the very many accidental hosts upon which fleas occur purely as stragglers. It so happens that fleas are great stragglers in this way and the literature abounds with reports of such occurrences.

MAMMALS

Badger	<i>Meles meles</i>
Bank vole	<i>Clethrionomys glareolus</i>
Barbastelle bat	<i>Barbastella barbastella</i>
Black rat	<i>Rattus rattus</i>
Cat	
Dog	
Field vole	<i>Microtus agrestis</i>
Fox	<i>Vulpes vulpes</i>
Grey squirrel	<i>Sciurus carolensis</i>
Hare	<i>Lepus spp.</i>
Hedgehog	<i>Erinaceus europaeus</i>
House mouse	<i>Mus musculus</i>
Leisler's bat	<i>Nyctalus leisleri</i>
Long-eared bat	<i>Plecotus auritus</i>
Mole	<i>Talpa europaea</i>
Nathusius' Pipistrelle	<i>Pipistrellus nathusii</i>
Natterer's bat	<i>Myotis nattereri</i>
Noctule	<i>Nyctalus noctula</i>
Pipistrelle	<i>Pipistrellus pipistrellus</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Rat	<i>Rattus spp.</i>
Red squirrel	<i>Sciurus vulgaris</i>
Serotine	<i>Vespertilio serotinus</i>
Shrews	<i>Sorex spp.</i> , <i>Neomys fodiens</i> , <i>Crocidura spp.</i>
Voies	<i>Clethrionomys spp.</i> , <i>Microtus spp.</i> , <i>Arvicola spp.</i>
Whiskered bat	<i>Myotis mystacinus</i>
Wood mouse	<i>Apodemus sylvaticus</i>

BIRDS

Crows

Corvidae

Domestic hen

Domestic pigeon

Duck

Heron

Ardea cinerea

House martin

Delichon urbica

House sparrow

Passer domesticus

Manx shearwater

Puffinus puffinus

Moorhen

Gallinula chloropus

Puffin

Fratercula arctica

Rock dove

Columba livia

Sand martin

Riparia riparia

Starling

Sturnus vulgaris

- Map 2. Pulex irritans Linne, 1738. Pulicidae — Pulicinae. The Human flea. Cosmopolitan. Frequently known from man and his dwellings, from pig-sties, badgers and foxes. Less common than before and advent of vacuum cleaners, organic insecticides and the modern levels of hygiene but certainly not rare. Often observed but less often recorded.
- Map 3. Xenopsylla cheopis (Rothschild, 1903). Pulicidae — Xenopsyllinae. The Tropical Rat Flea or the Plague Flea. Now Cosmopolitan but originally Ethiopian. From murine rodents, particularly Rattus rattus and related hosts. The vector of Pasteurella pestis the causative organism of bubonic plague. Breeding colonies in heated buildings, particularly in ports, have been recorded in Great Britain but there are no recent records.
- Map 4. Archaeopsylla erinacei erinacei (Bouche, 1835). Pulicidae — Archaeopsyllinae. The Hedgehog Flea. European and Mediterranean sub-regions of the Palaearctic. Occurs on almost every hedgehog and probably occurs throughout the range of the host. Very high populations develop on the host.
- Map 5. Ctenocephalides canis (Curtis, 1826). The Dog Flea. Pulicidae — Archaeopsyllinae. Ethiopian, now Cosmopolitan. Mainly from dogs and foxes but not infrequently from cats and man. Certainly more common than the records suggest but possibly reaching its northern limit in Scotland.
- Map 6. Ctenocephalides felis felis (Bouche, 1835). Pulicidae — Archaeopsyllinae. The Cat Flea. Ethiopian now Cosmopolitan. Mainly on cats but frequently on dogs and man. More common than canis but also probably reaching its northern limit in Scotland.
- Map 7. Spilopsyllus cuniculi (Dale, 1878). Pulicidae — Spilopsyllinae. The Rabbit Flea. European and Mediterranean sub-regions of the Palaearctic. The true host is the rabbit but not infrequent on the hare and cat. Probably introduced in post-Norman Conquest times and now throughout the British Isles. The vector of the myxomatosis-causing virus. The reproductive cycle is intimately connected with that of its host (see the many papers by Dr M. Rothschild and her co-workers).
- Map 8. Ornithopsylla laetitiae Rothschild, 1908. Pulicidae — Spilopsyllinae. The Shearwater Flea. Confined to the British Isles, usually in association with the Manx Shearwater but also with the Puffin.
- Map 9. Hystrichopsylla talpae talpae (Curtis, 1826). Hystrichopsyllidae — Hystrichopsyllinae. The Mole Flea. West European area of the Palaearctic. Well known as Britain's largest flea. An ectoparasite of moles, voles, shrews and wood mice. The latter is possibly the true host.
- Map 10. Typhloceras poppei Wagner, 1903. Hystrichopsyllidae — Hystrichopsyllinae. Palaearctic. A flea of Apodemus sylvaticus but not throughout the range of the host. There are no mainland records from Scotland, most of Wales and the northern half of England, also apparently absent from many localities in the south.
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- Map 13. Rhadinopsylla integella integella Jordan & Rothschild, 1921. Hystrichopsyllidae — Rhadinopsyllinae. Palaearctic. A very rare vole flea of mountainous districts.
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- Map 15 Palaeopsylla soricis soricis (Dale, 1878). Hystrichopsyllidae — Ctenophthalminae. Palaearctic. A flea of shrews.
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- Map 17 Palaeopsylla kohauti Dampf, 1910. Hystrichopsyllidae — Ctenophthalminae. European sub-region of the Palaearctic. A rare flea of the mole more frequently seen in Scotland than from moles elsewhere in the British Isles.
- Map 18 Ctenophthalmus congener congener (Rothschild, 1907). Hystrichopsyllidae — Ctenophthalminae. Palaearctic. An uncommon flea of voles, particularly Clethrionomys glareolus. Possibly it reached this country shortly before the separation from the continent and is now slowly spreading westwards. Alternatively it could be a moderately recent introduction by man to the south east of England.
- Map 19 Ctenophthalmus bisectodentatus Kolenati, 1863. Hystrichopsyllidae — Ctenophthalminae. European Mediterranean sub-regions of the Palaearctic. A mole flea. The nominate form is known from Jersey and ssp. heselhausi (Oudemans, 1914) from the remainder of the British Isles.
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- Map 23
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- Map 25 Ischnopsyllus intermedius (Rothschild, 1898). Ischnopsyllidae — Ischnopsyllinae. Palaearctic. The Serotine is the normal host but it is also found on Noctule and Leisler's bats. None of these are cave dwellers.
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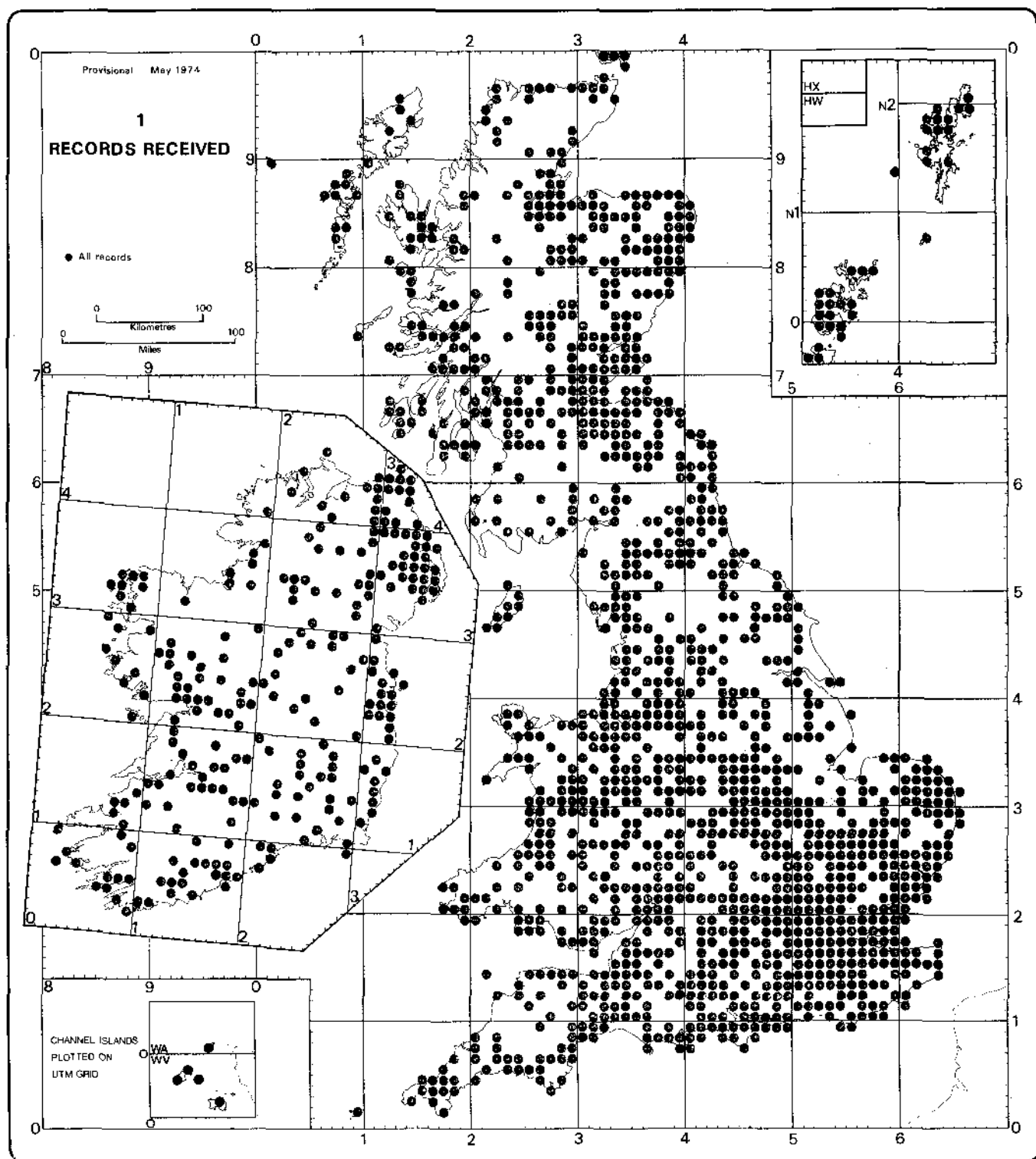
- Map 29 Nycteridopsylla eusarca Dampf, 1908. Ischnopsyllidae — Ischnopsyllinae. Holarctic. A very rare flea of the Noctule bat.
- Map 30 Nycteridopsylla longiceps Rothschild, 1908. Ischnopsyllidae — Ischnopsyllinae. European and Mediterranean sub-regions of the Palaearctic. A not very common flea of Pipistrelle and Long-eared bats in the southern part of their ranges.
- Map 31 Leptopsylla segnis (Schonherr, 1811). Leptopsyllidae — Leptopsyllinae. The House Mouse Flea. Palaearctic and Ethiopian now Cosmopolitan. Usually taken on the House mouse. Taken out-of-doors only infrequently.
- Map 32 Peromyscopsylla spectabilis (Rothschild, 1898). Leptopsyllidae — Leptopsyllinae. The western part of the European sub-region of the Palaearctic. Its hosts are Clethrionomys glareolus and Microtus agrestis but it does not appear to be evenly spread throughout the populations of these voles.
- Map 33 Frontopsylla laeta (Jordan & Rothschild, 1920). Leptopsyllidae — Amphipsyllinae. European sub-region of the Palaearctic. A very rare flea which occupies the nests of house martins on cliffs. The preferred sites are on coastal cliffs.
- Map 34 Paraceras melis melis (Walker 1856). Ceratophyllidae — Ceratophyllinae. The Badger Flea. Palaearctic. Commonly on the badger. The second largest flea of the British fauna.
- Map 35 Dasypsyllus gallinulae gallinulae (Dale, 1878). Ceratophyllidae — Ceratophyllinae. Sometimes called The Moorhen Flea. Palaearctic. A very common flea particularly in the nests of passerine birds and nests on or near the ground.
- Map 36 Malaraeus penicilliger mustelae (Dale, 1878). Ceratophyllidae — Ceratophyllinae. Holarctic with this ssp. in the European sub-region of the Palaearctic. The true host is probably Clethrionomys glareolus but it is taken from most of our small mammals.
- Map 37 Orchopeas howardi howardi (Baker, 1895). Ceratophyllidae — Ceratophyllinae. The Grey Squirrel Flea. Nearctic. Introduced to this country on its host, the Grey Squirrel. Nest populations sometimes build to immense numbers.
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- Map 39 Nosopsyllus fasciatus (Bosc, 1800). Ceratophyllidae — Ceratophyllinae. The Rat Flea. Cosmopolitan. Normally found on rats but not infrequent on other small rodents particularly those taken near buildings.
- Map 40 Nosopsyllus londiniensis (Rothschild, 1903). Ceratophyllidae — Ceratophyllinae. Originally Mediterranean sub-region of the Palaearctic but now largely Cosmopolitan. Generally on the house mouse and probably brought to this country in trade goods.

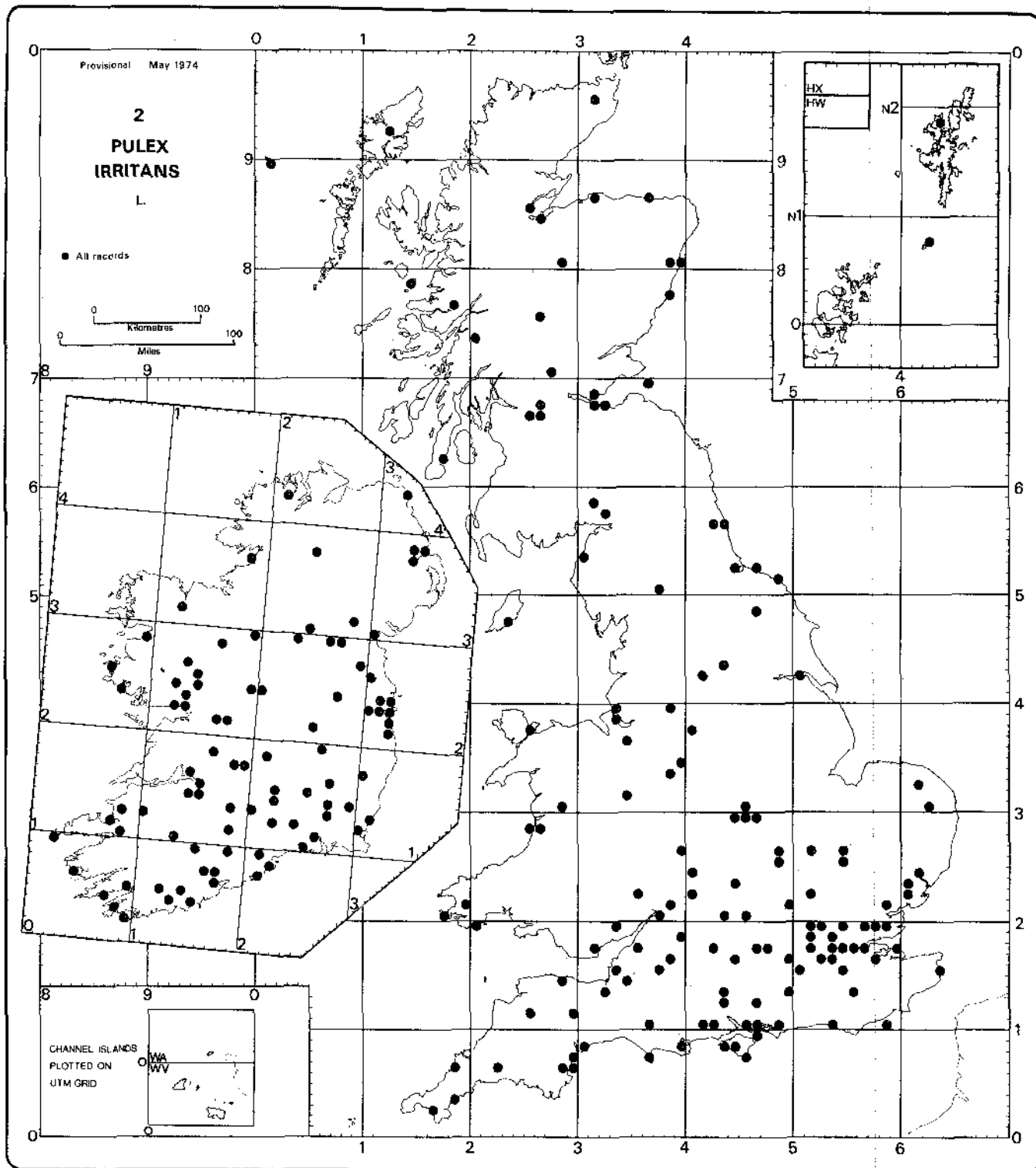
- Map 41 Tarsopsylla octodecimdentata octodecimdentata (Kolenti, 1863). Ceratophyllidae — Ceratophyllinae. This is the Palearctic ssp. of a Holarctic flea. A red squirrel flea probably introduced into this country at the time of the re-afforestation of Scotland in the eighteenth century.
- Map 42 Megabothris rectangulatus (Wahlgren, 1903). Ceratophyllidae — Ceratophyllinae. Palearctic. A microtine flea with a British distribution probably somewhat affected by man.
- Map 43 Megabothris turbidus (Rothschild, 1909) Ceratophyllidae — Ceratophyllinae. Palearctic. A flea of Microtus agrestis and Apodemus sylvaticus but not throughout their full range.
- Map 44 Megabothris walkeri (Rothschild, 1902). Ceratophyllidae — Ceratophyllinae. Palearctic. A common vole flea with a wider distribution than that of turbidus apparently prefers damper sites.
- Map 45 Monopsyllus sciurorum sciurorum (Schrank, 1803). Ceratophyllidae — Ceratophyllinae. The Red Squirrel Flea. Palearctic. Monoxenous on the red squirrel. Many of the records are old and represent the one-time occurrence of the host in areas now occupied by the grey squirrel.
- Map 46 Ceratophyllus gallinae (Schrank, 1803). Ceratophyllidae — Ceratophyllinae. Sometimes called the Hen Flea. Palearctic. An extremely common bird flea which is able to tolerate a very wide range of habitats though less successful on small islands and similar maritime conditions than inland.
- Map 47 Ceratophyllus rossittensis rossittensis Dampf, 1913. Ceratophyllidae — Ceratophyllidae — Ceratophyllinae. Holarctic. This ssp. limited to the European sub-region of the Palearctic. Rarely observed but the nests of its hosts -crows-are rarely examined. Possibly not always recognised because of the similarity of the females to gallinae.
- Map 48 Ceratophyllus fringillae (Walker, 1856). Ceratophyllidae — Ceratophyllinae. The House Sparrow Flea. Palearctic. Associated with house sparrows and starlings. The females are not easy to separate from those of gallinae.
- Map 49 Ceratophyllus vagabundus insularis Rothschild, 1906. Ceratophyllidae — Ceratophyllinae. The European sub-region ssp. of a Holarctic flea. An ectoparasite of sea birds nesting at ground level or in burrows but inland usually found in the nests of Corvidae and recently that of the Heron.
- Map 50 Ceratophyllus rusticus Wagner, 1903. Ceratophyllidae — Ceratophyllinae. Palearctic. It appears to be more at home in the nest of house martins on natural sites than in those on houses.
- Map 51 Ceratophyllus farreni farreni Rothschild, 1905. Ceratophyllidae — Ceratophyllinae. Palearctic. Another house martin flea which appears to be more successful in nest on natural sites than on buildings.
- Map 52 Ceratophyllus hirundinis (Curtis, 1826). Ceratophyllidae — Ceratophyllinae. The House Martin Flea. Palearctic. The most common of all the house martin fleas but the highest populations are found in nests on buildings rather than those on natural sites. There is a range of intermediates amongst hirundinis, rusticus and f. farreni but little work has been done on them.

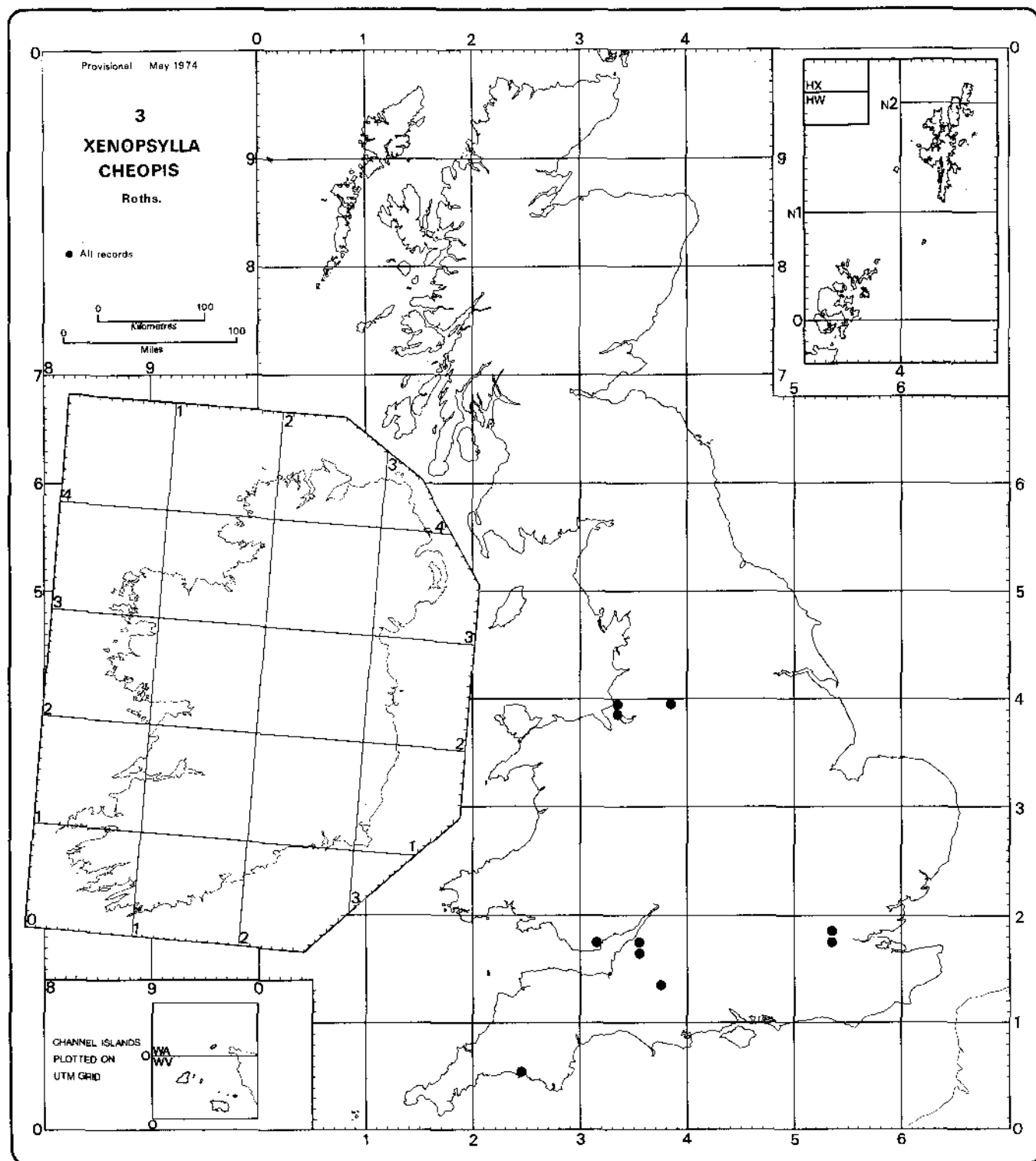
- Map 53 Ceratophyllus styx Rothschild, 1900. Ceratophyllidae — Ceratophyllinae. The Sand Martin Flea. Palaearctic. There are two ssp. of this flea in Britain and a range of intermediates is found in the overlapping areas of the two forms.
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- Map 56
- Map 57 Ceratophyllus columbae (Gervais, 1844). Ceratophyllidae — Ceratophyllinae. The Pigeon Flea. Palaearctic. Found in the nests of Columba livia and also feral domestic pigeon. Rarely observed but the nests of these birds are not often examined.
- Map 58 Ceratophyllus garei Rothschild, 1902. Ceratophyllidae — Ceratophyllinae. The Duck Flea. Holarctic. A very common flea in the nests of birds which build at ground level, on rocky sites and cliffs. Occasionally found in the nests of Parus ssp. in nesting boxes.
- Map 59 Ceratophyllus borealis Rothschild 1907. Ceratophyllidae — Ceratophyllinae. Palaearctic plus Greenland. Capable of occupying the same sites as garei but much less rarely seen inland where it may occupy very sheltered ground level nests. On coastal cliffs and small islands largely replaces garei.
- Map 60 Chaetopsylla trichosa trichosa Kohaut, 1903. Vermipsyllidae. Palaearctic. A badger flea which has been expected from the south of England. Its occurrence in Scotland is surprising.

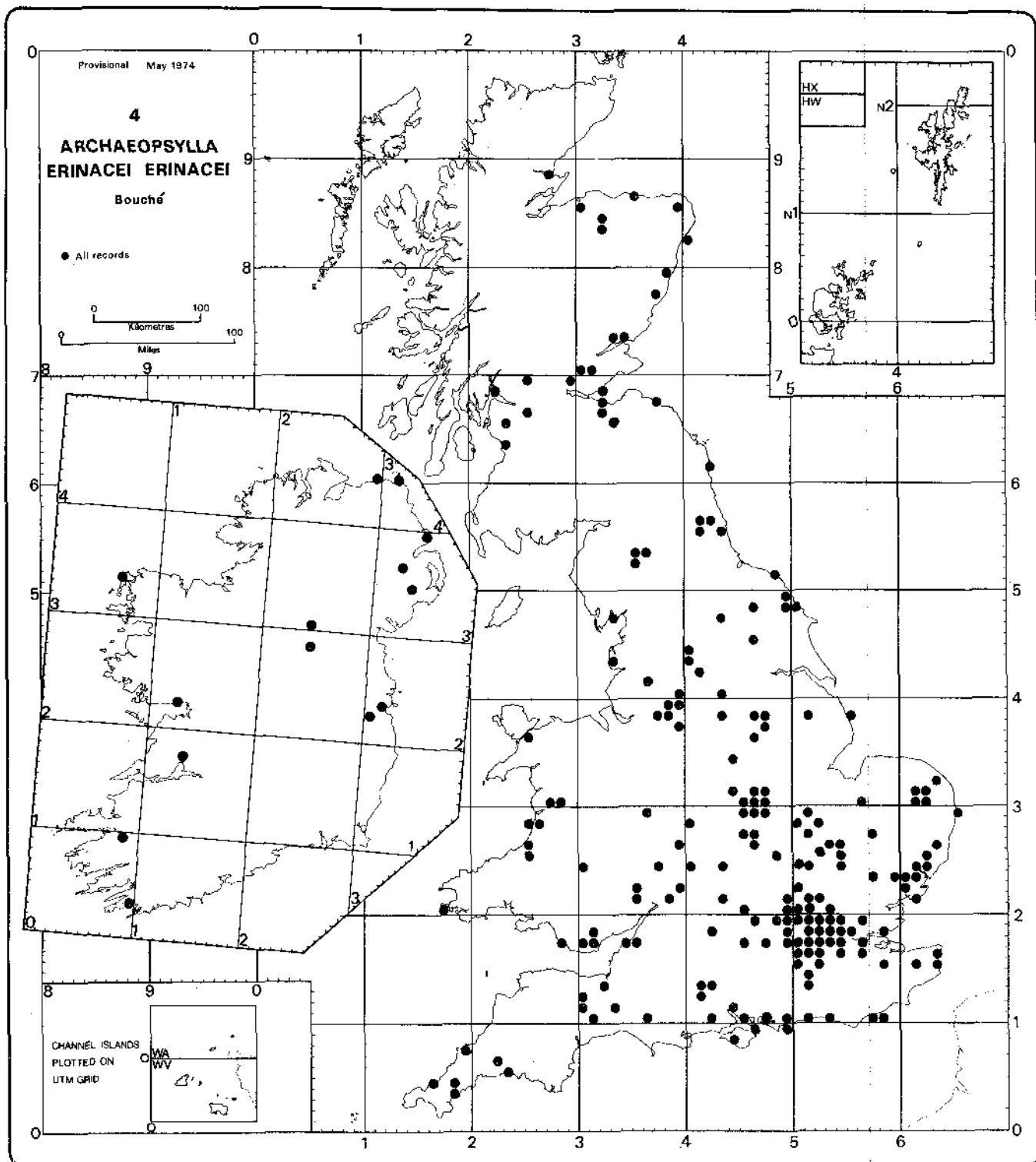
Ceratophyllus fionnus Usher, 1968. Ceratophyllidae — Ceratophyllinae. Only known from the nests of the Manx Shearwater at high altitude on the Island of Mull.

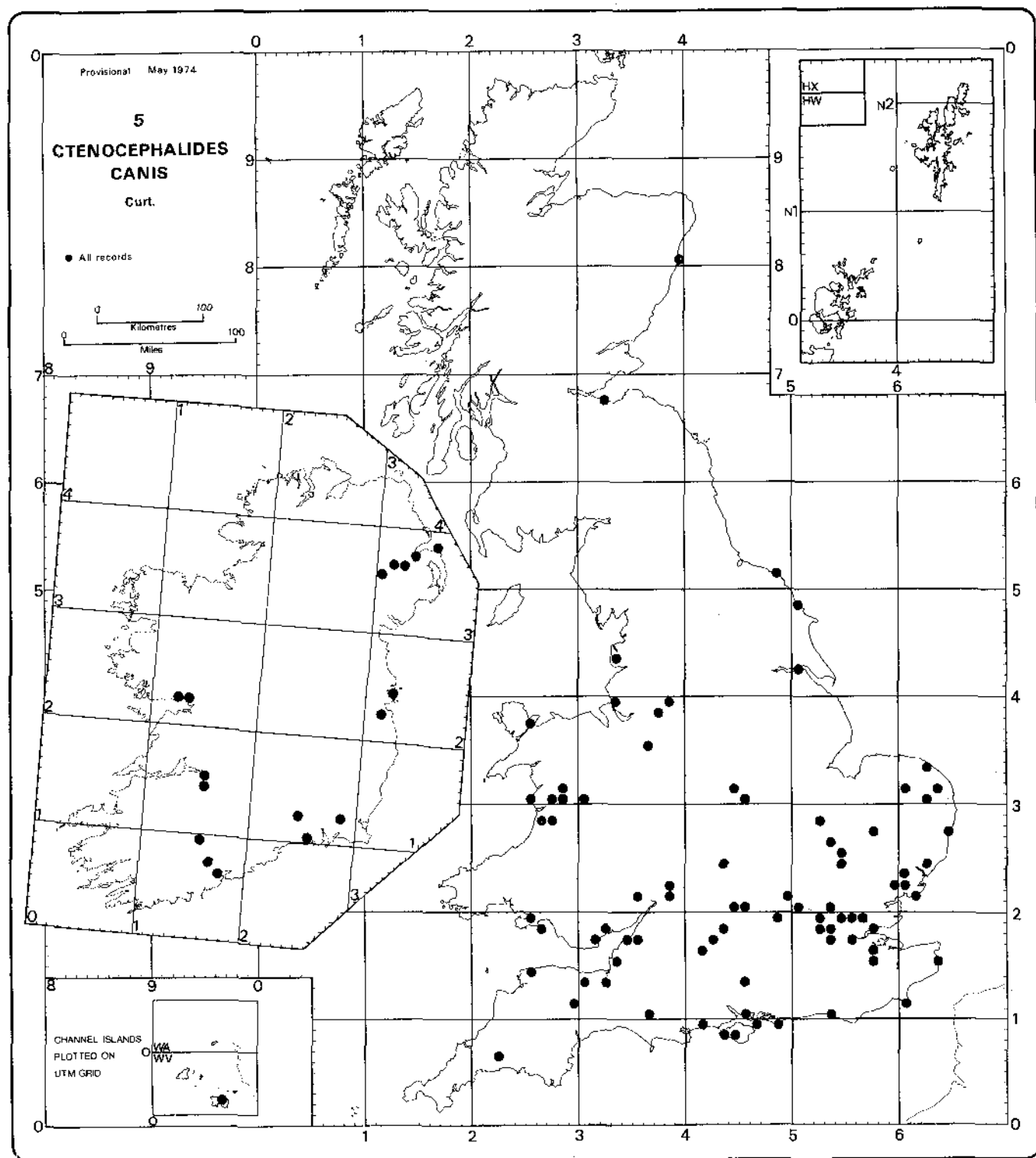
Ischnopsyllus variabilis (Wagner, 1898). Ischnopsyllidae — Ischnopsyllinae. European and Mediterranean sub-regions of the Palaearctic. A single record from one of its normal hosts, Pipistrellus nathusii.

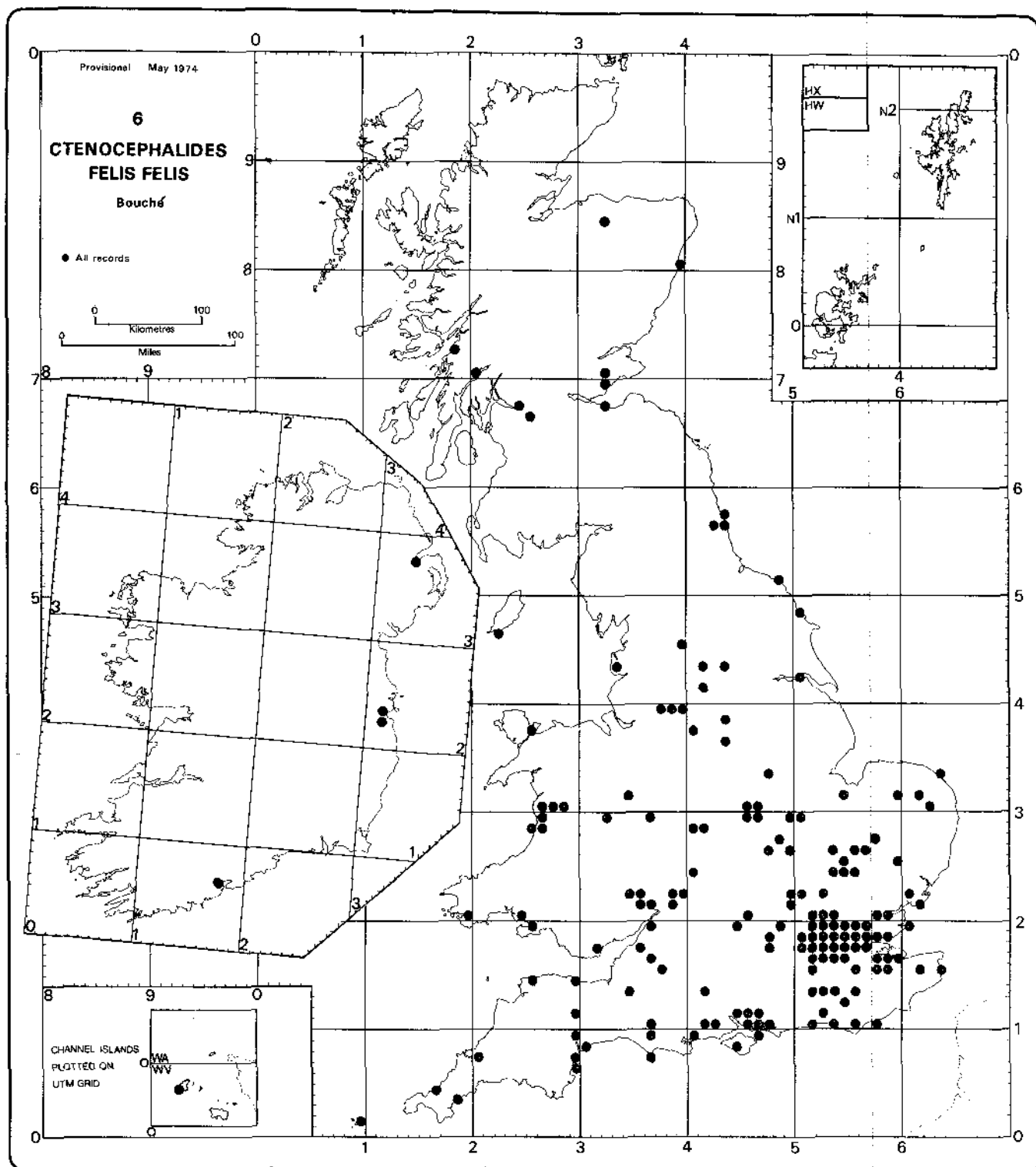


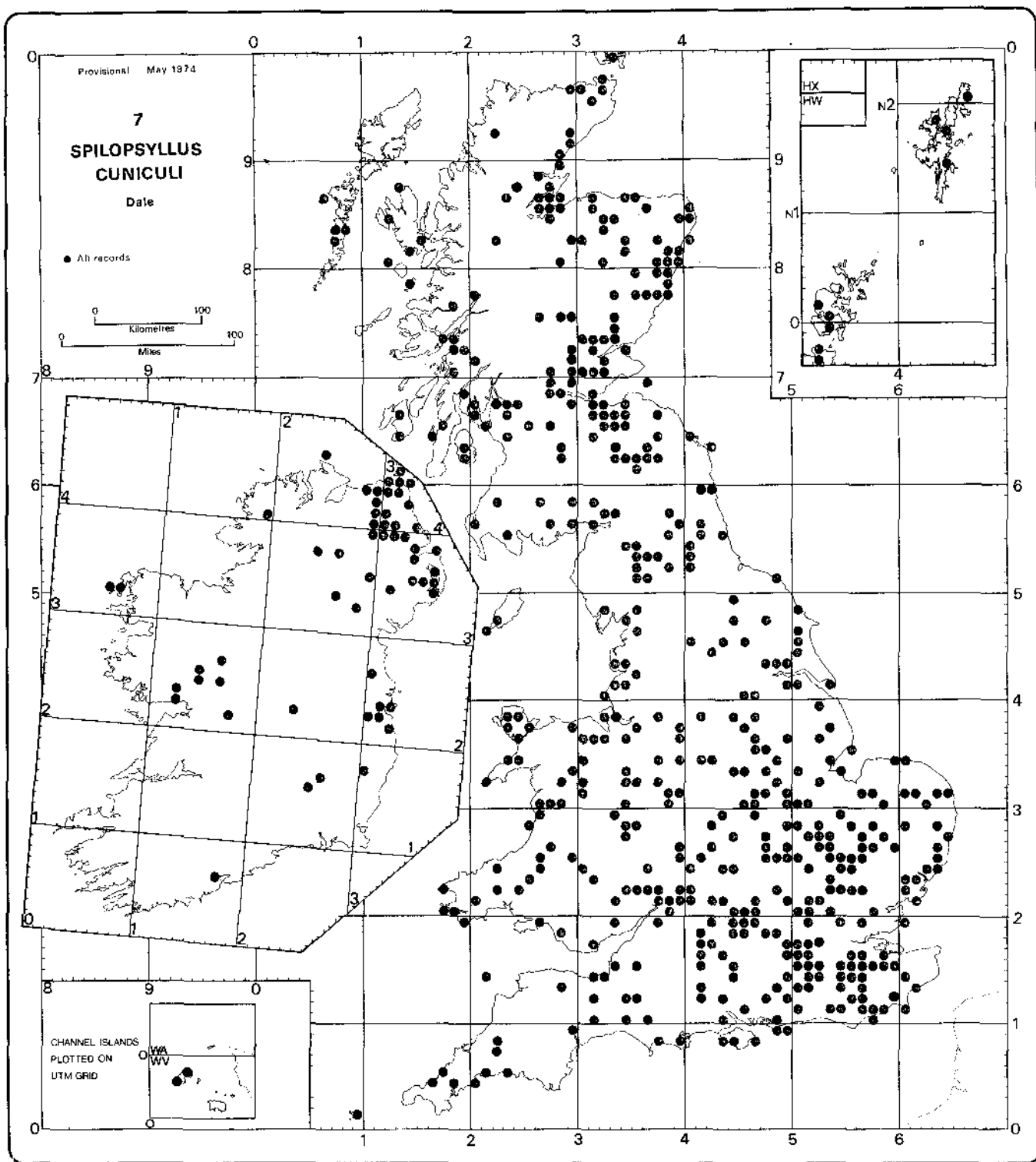


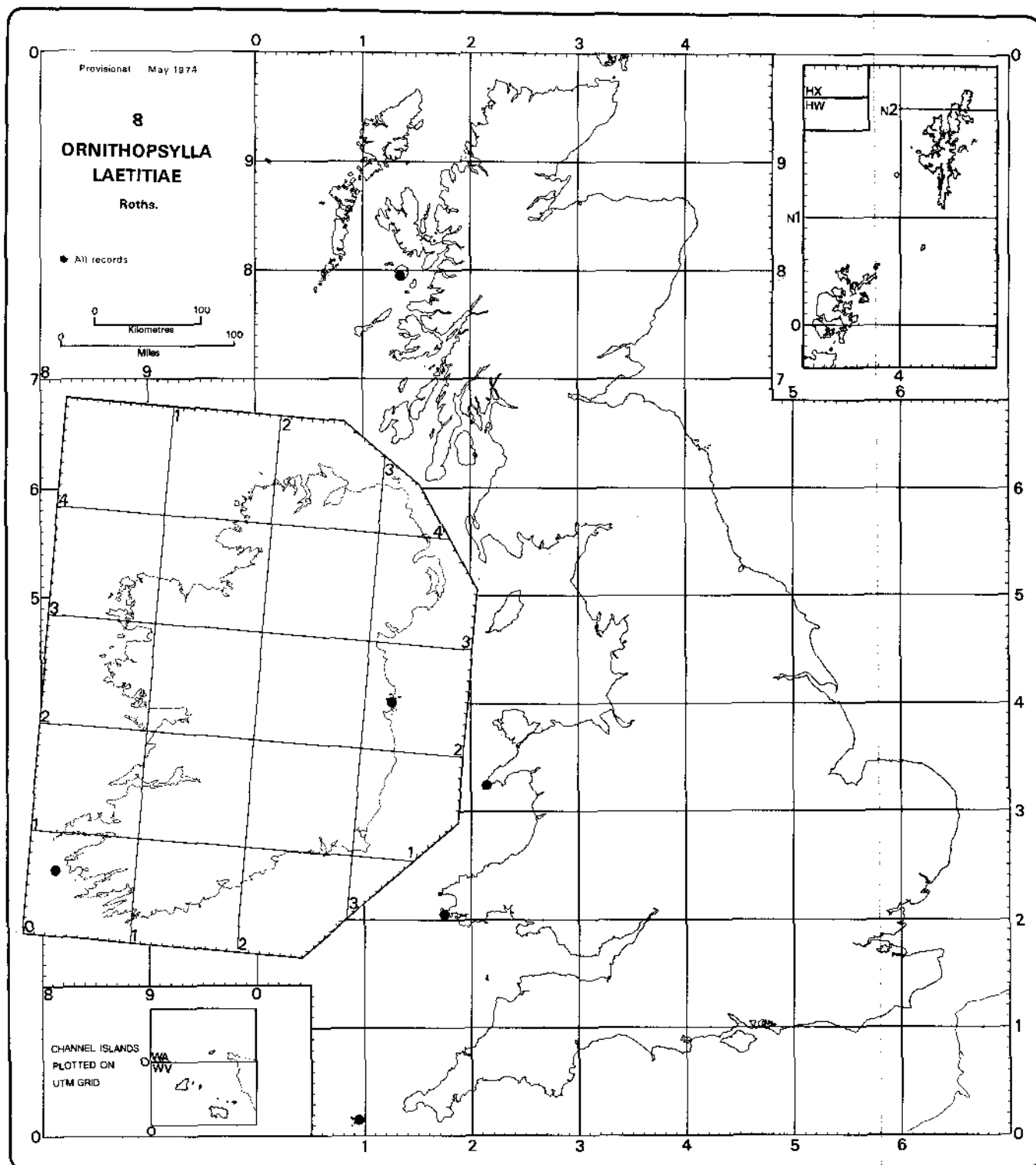


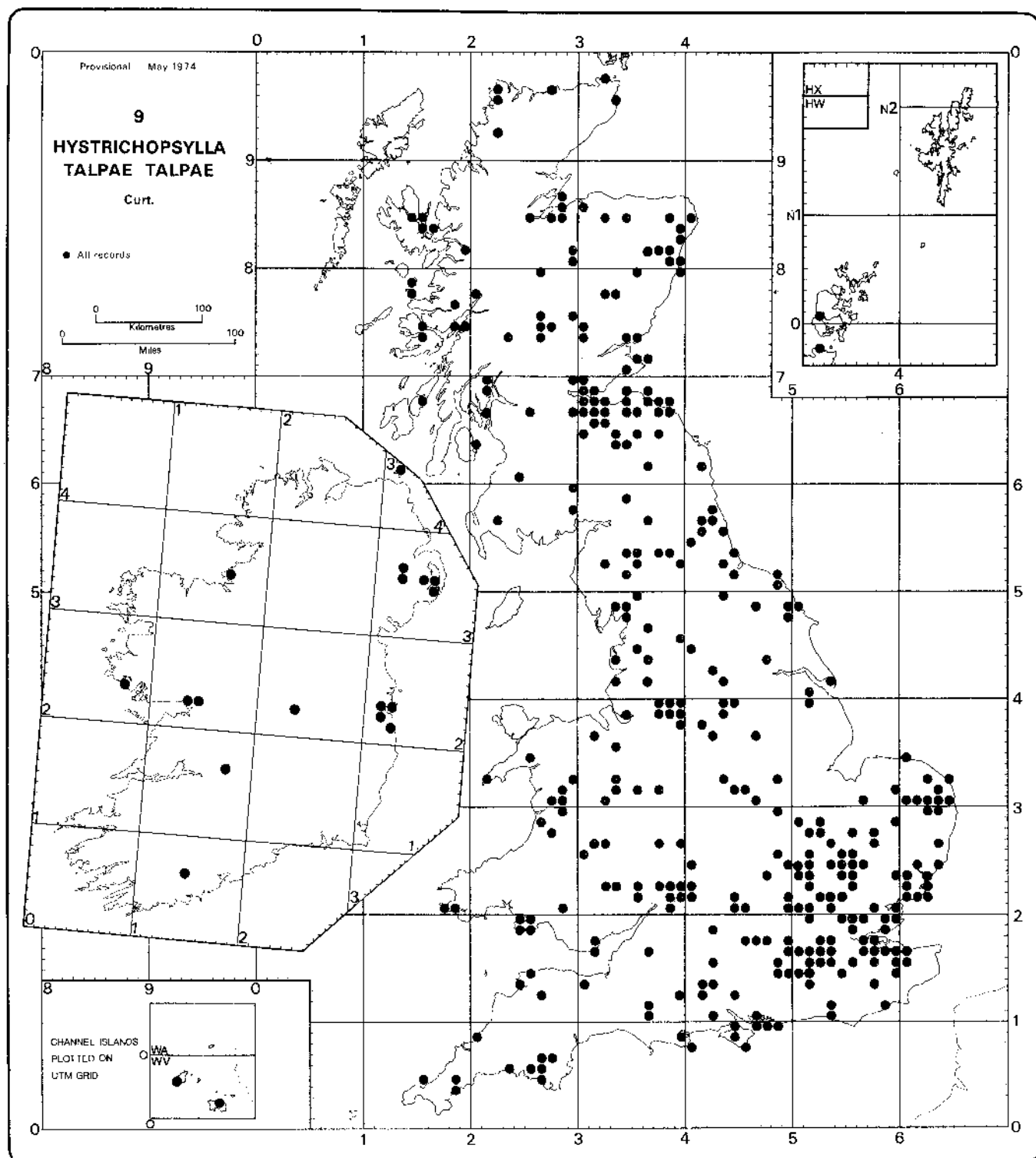


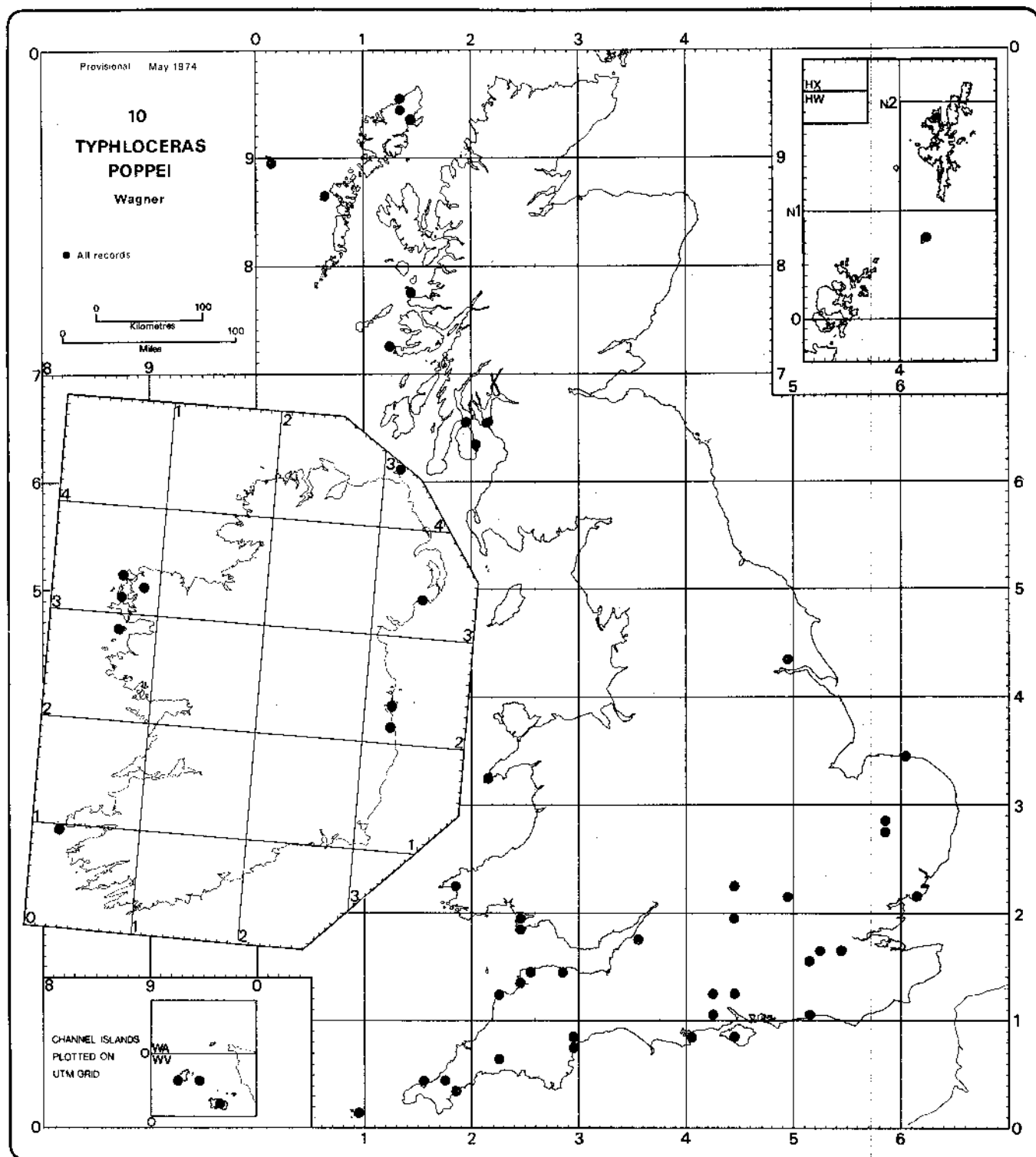


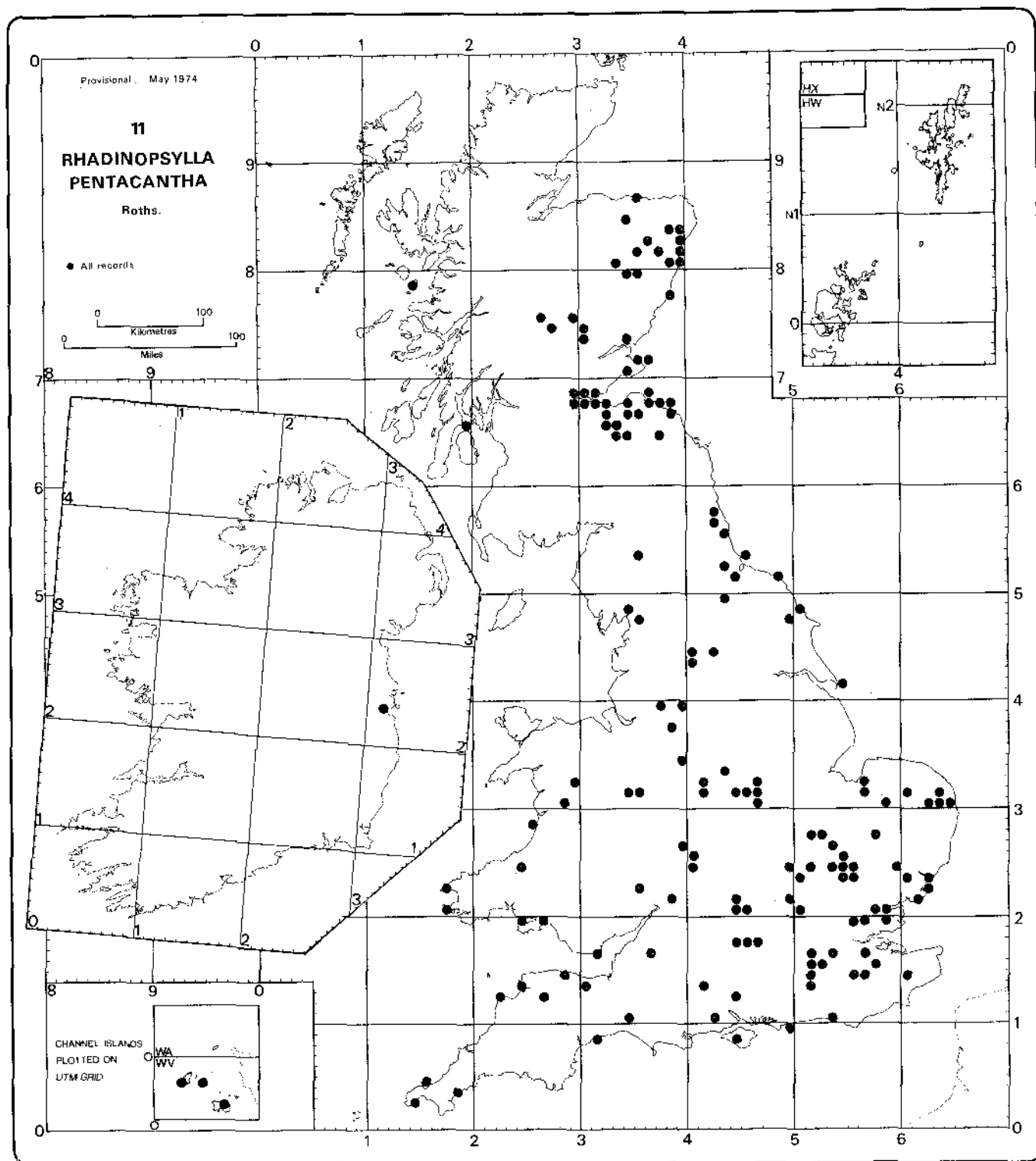


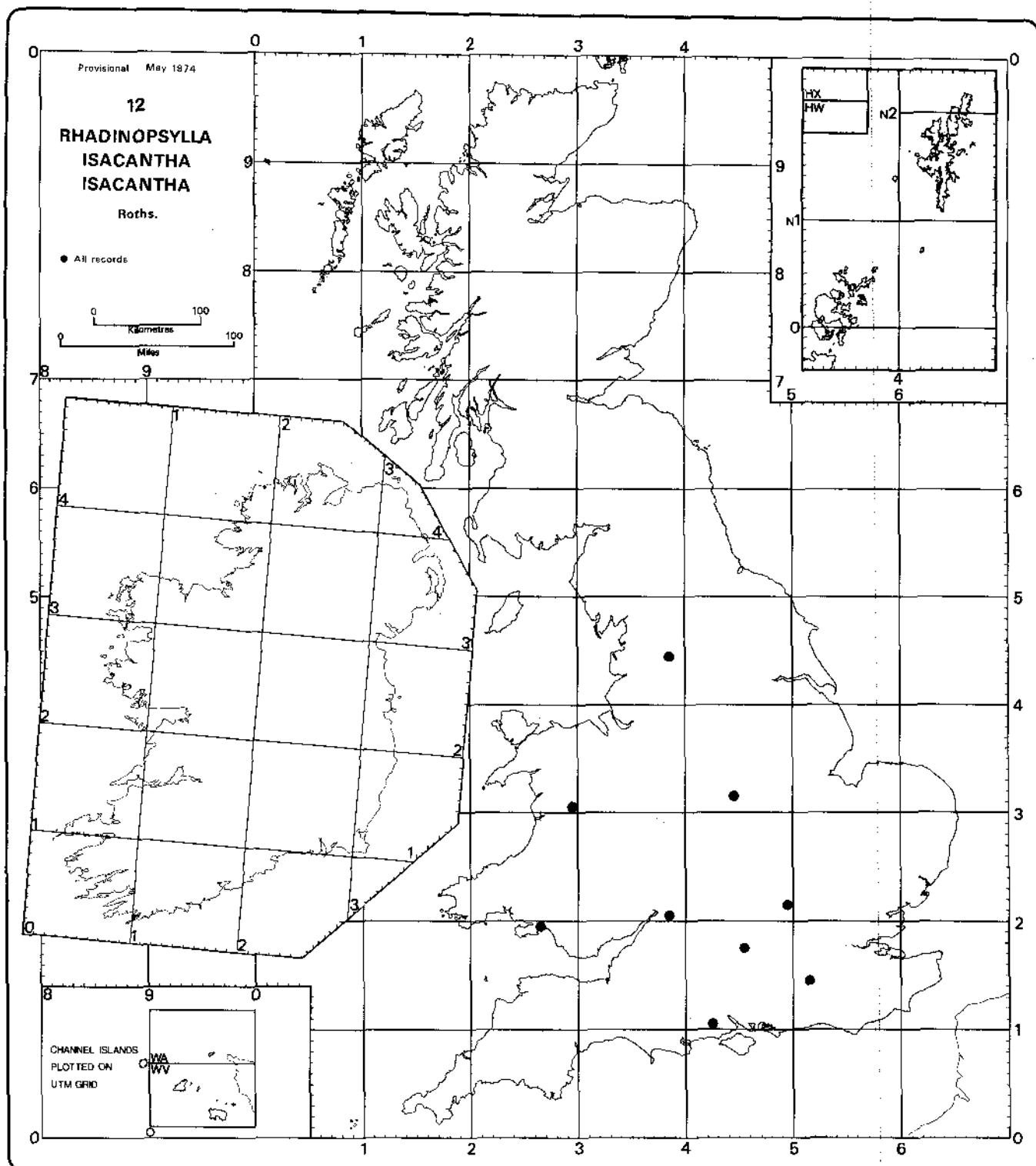


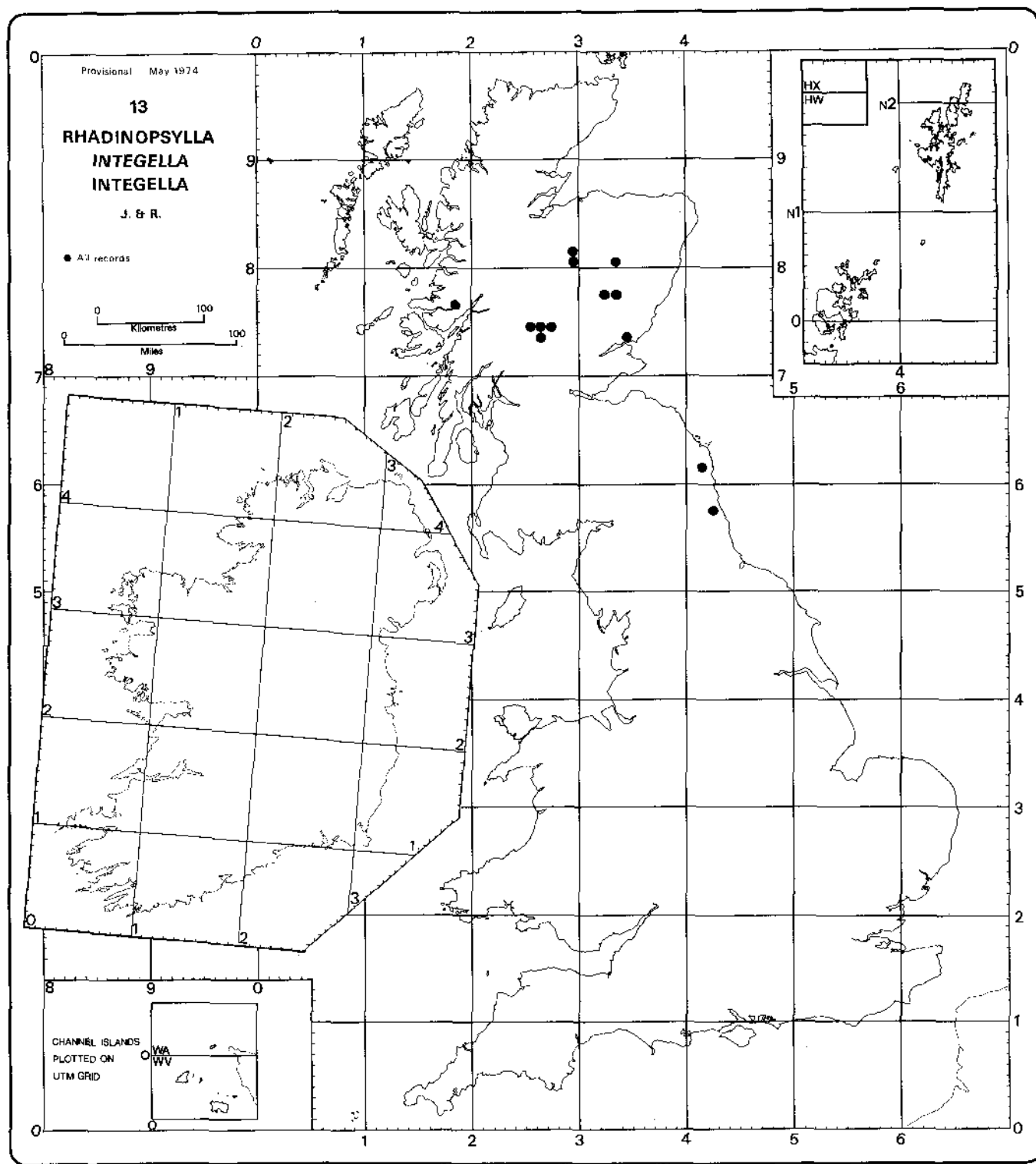












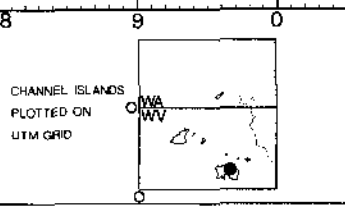
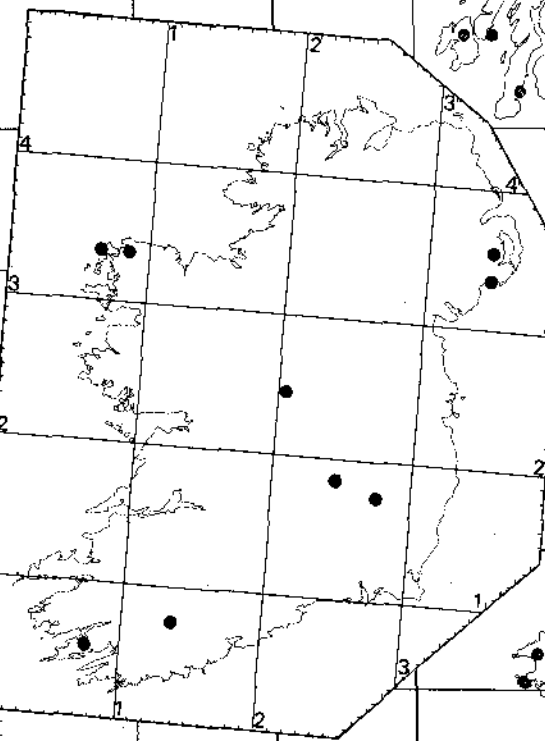
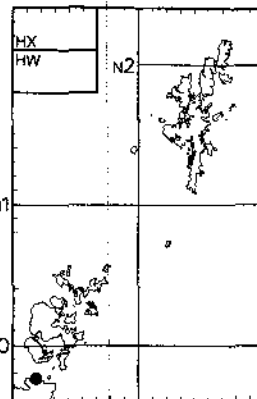
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DORATOPSYLLA
DASYCNEMA
DASYCNEMA

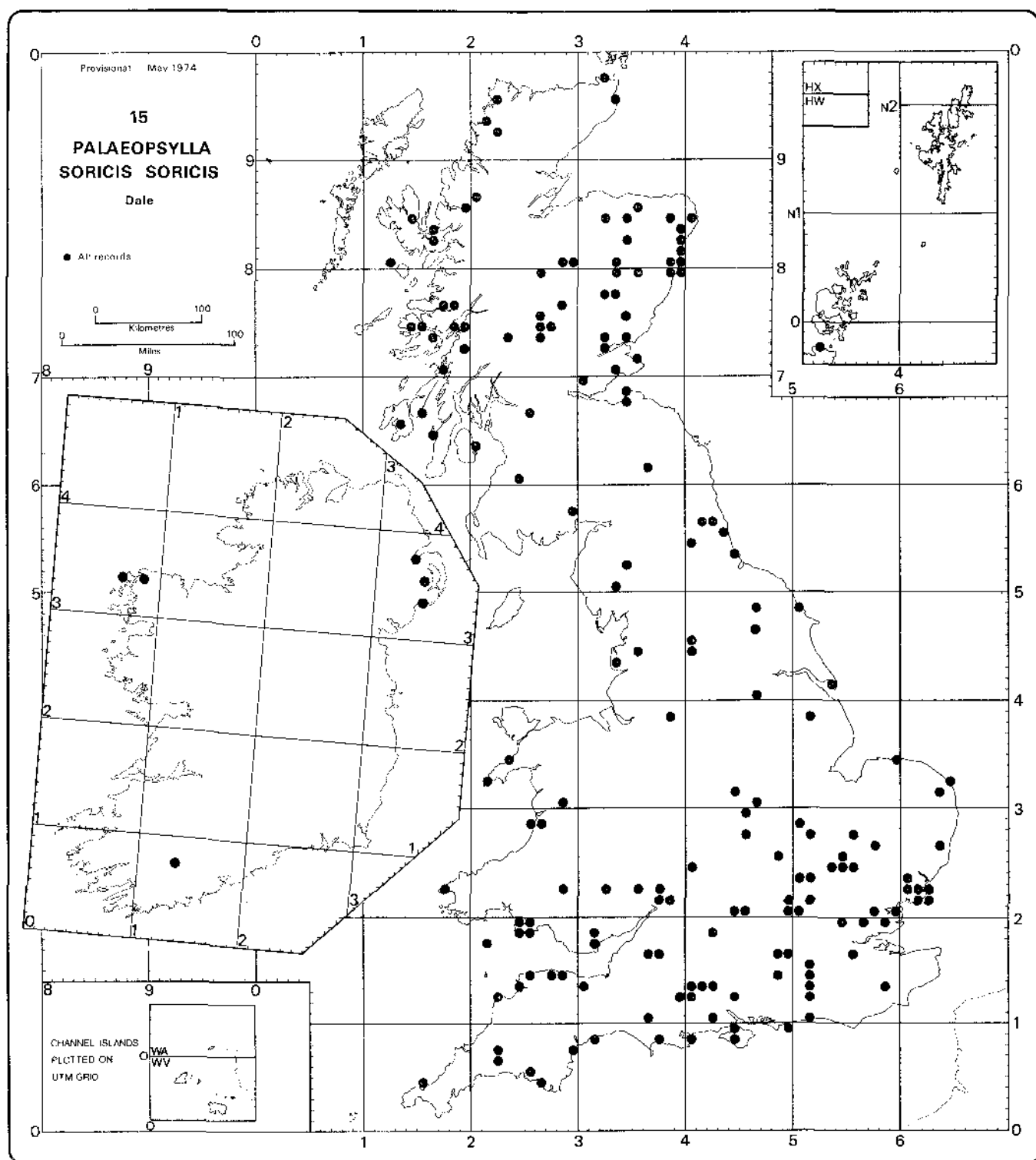
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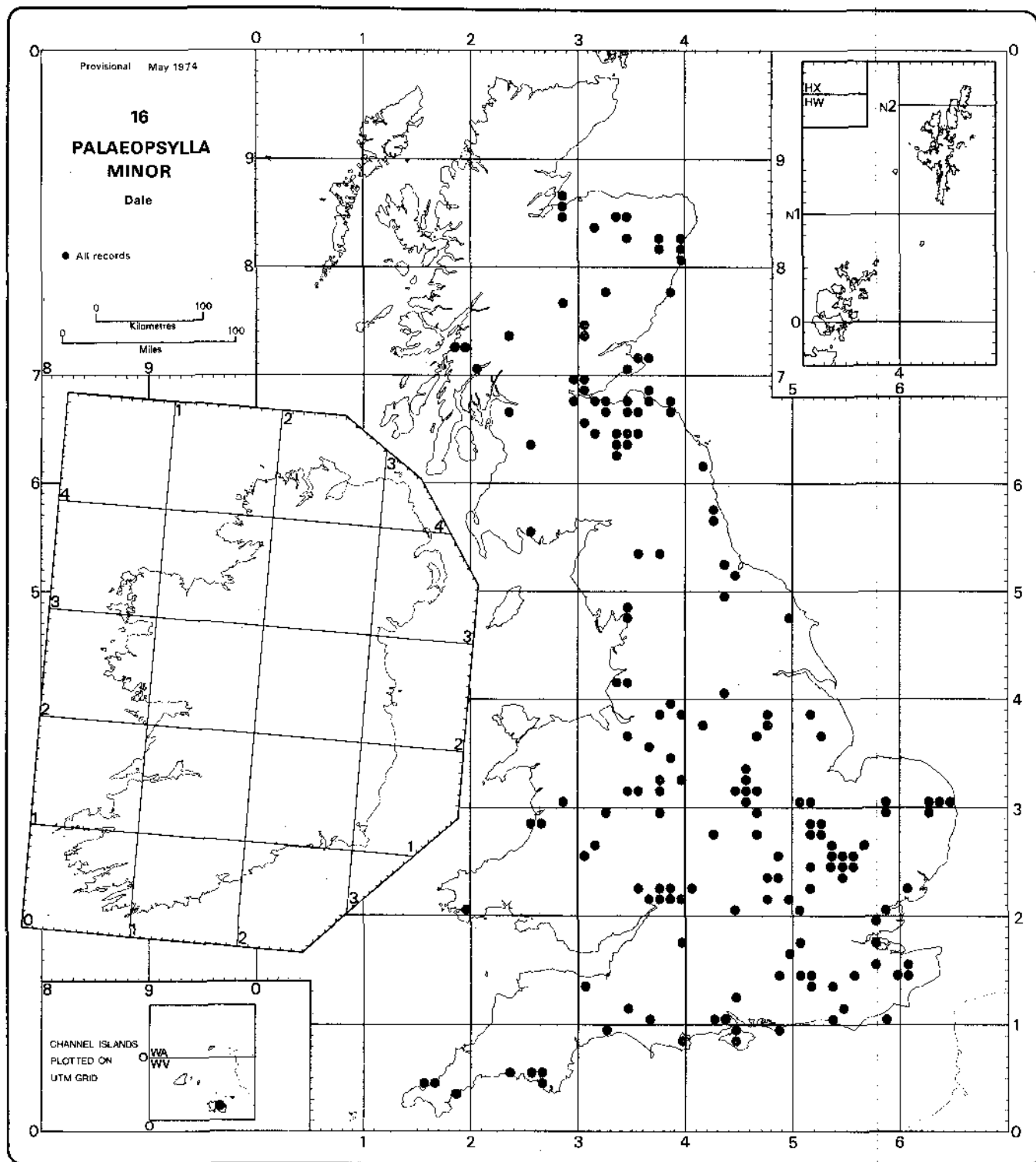
● All records

0 100
Kilometres
0 100
Miles



CHANNEL ISLANDS
PLOTTED ON
UTM GRID





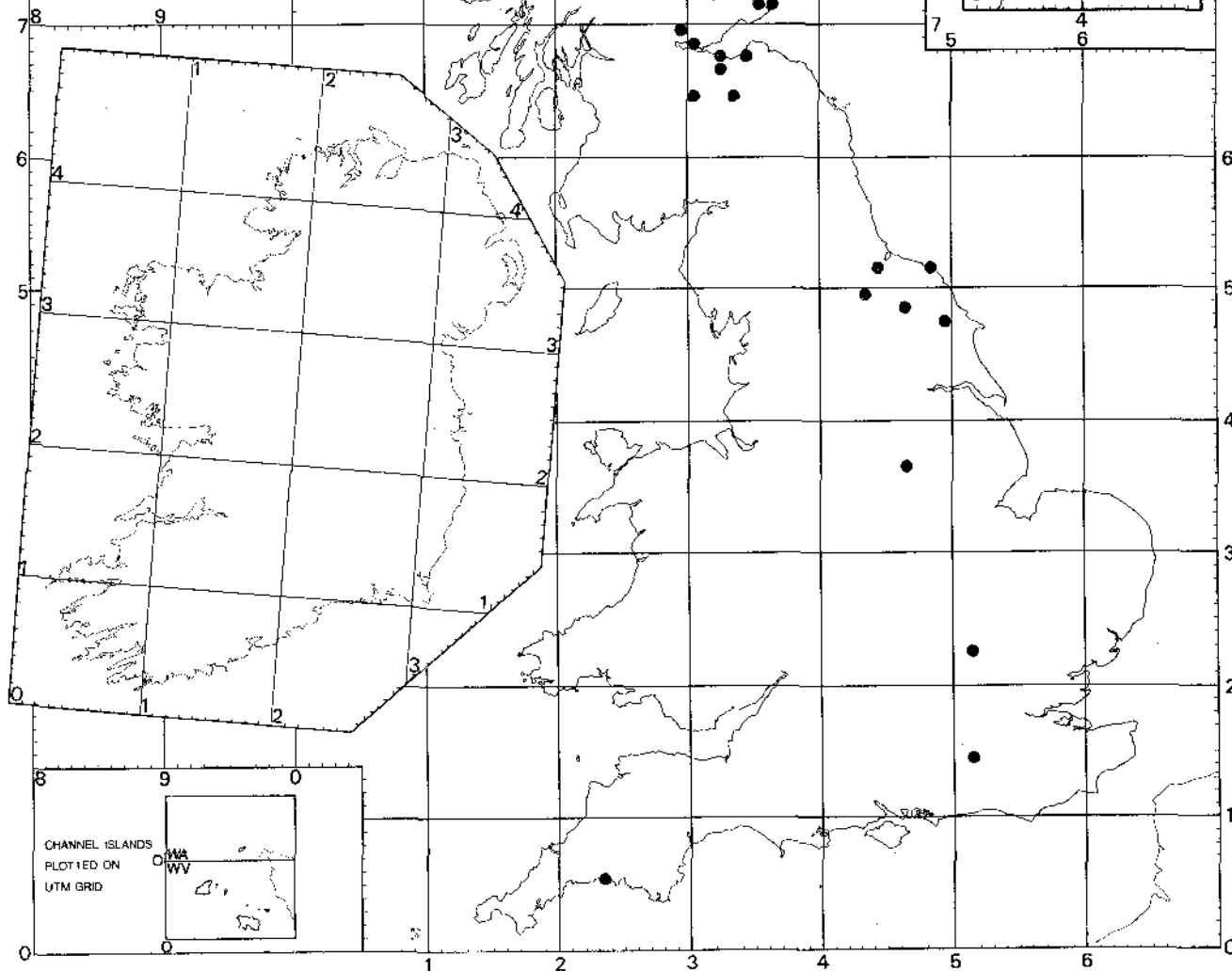
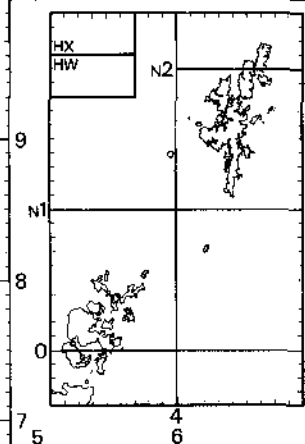
Provisional: May 1974

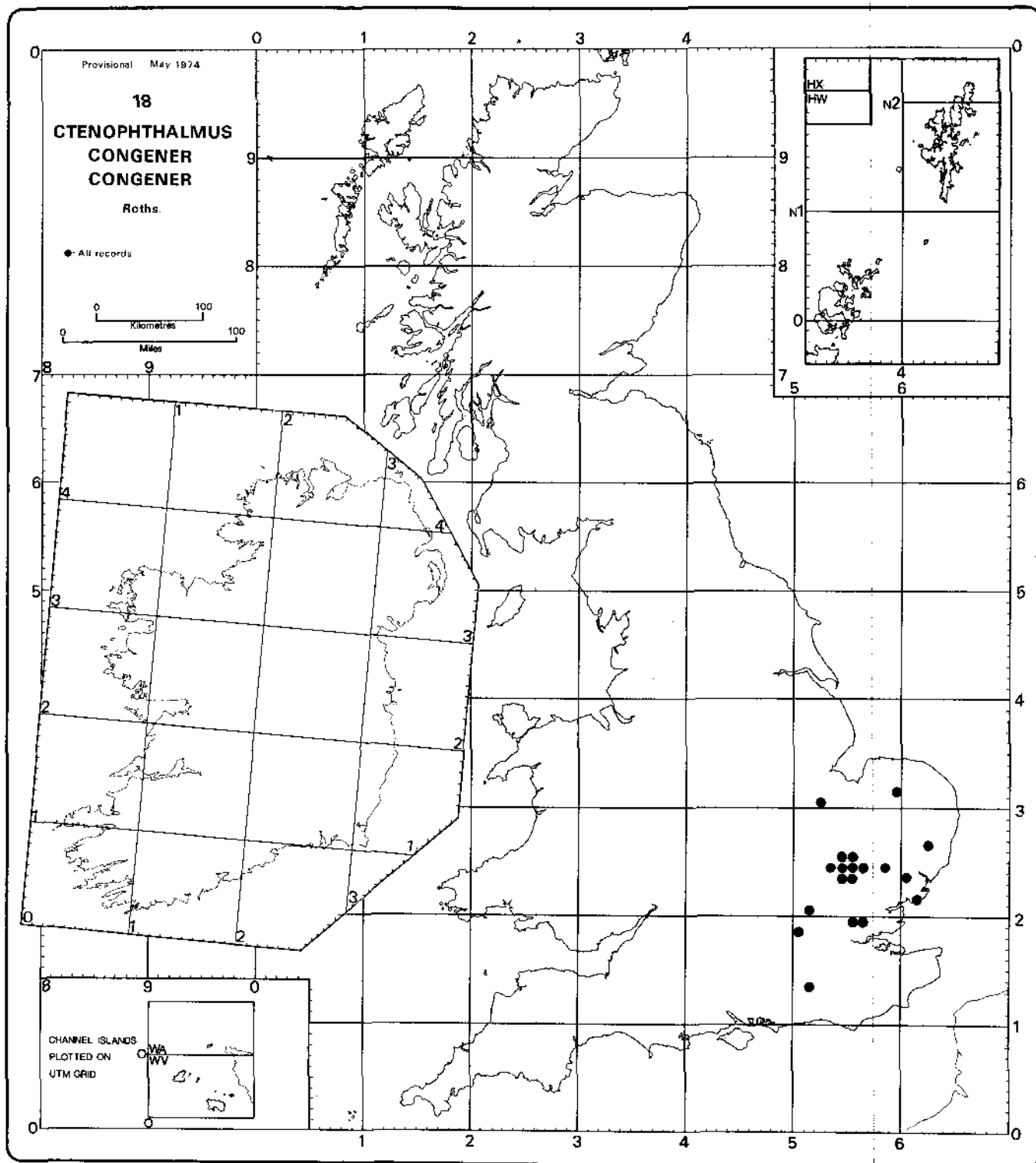
17
PALAEOPSYLLA
KOHAUTI

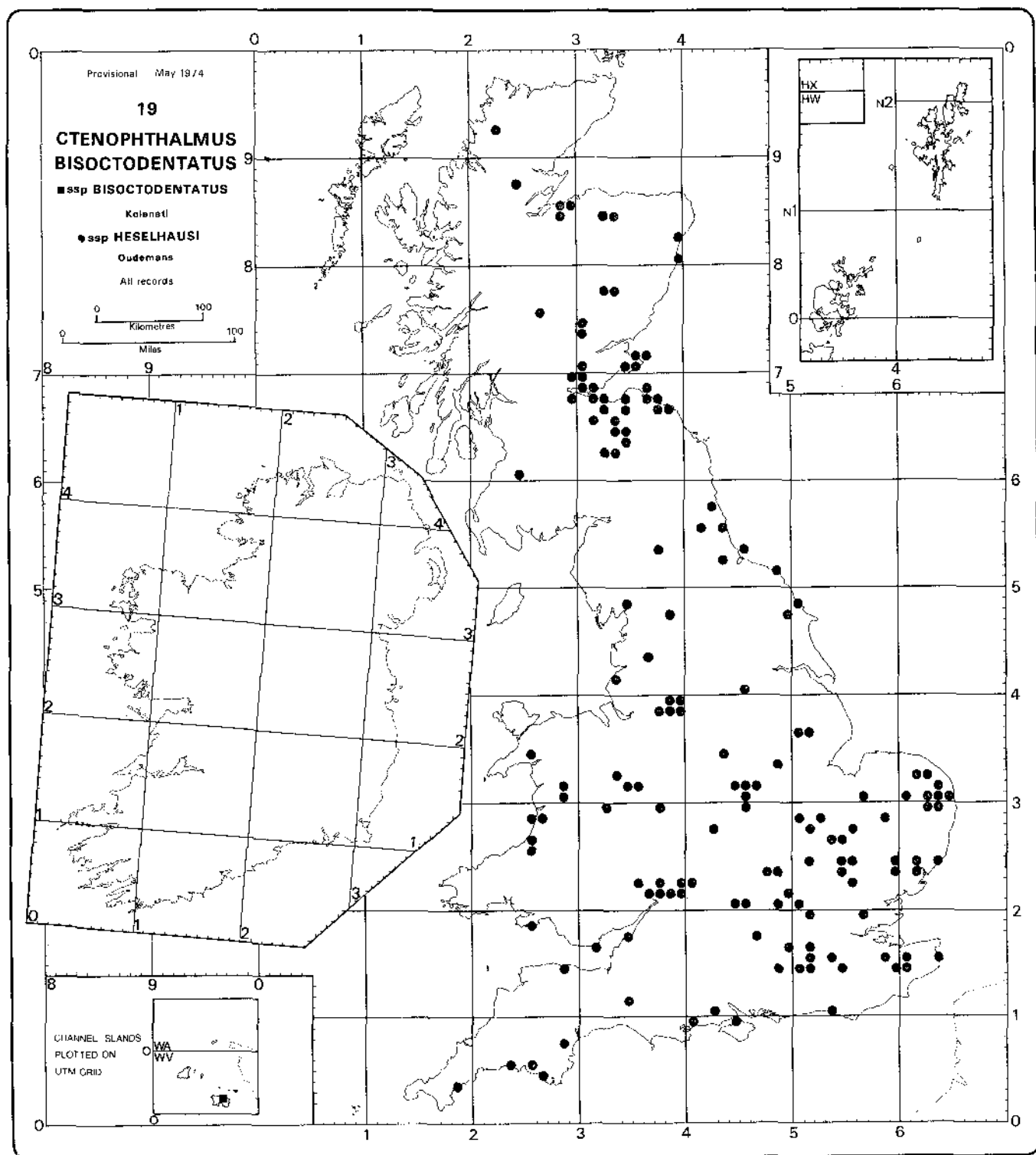
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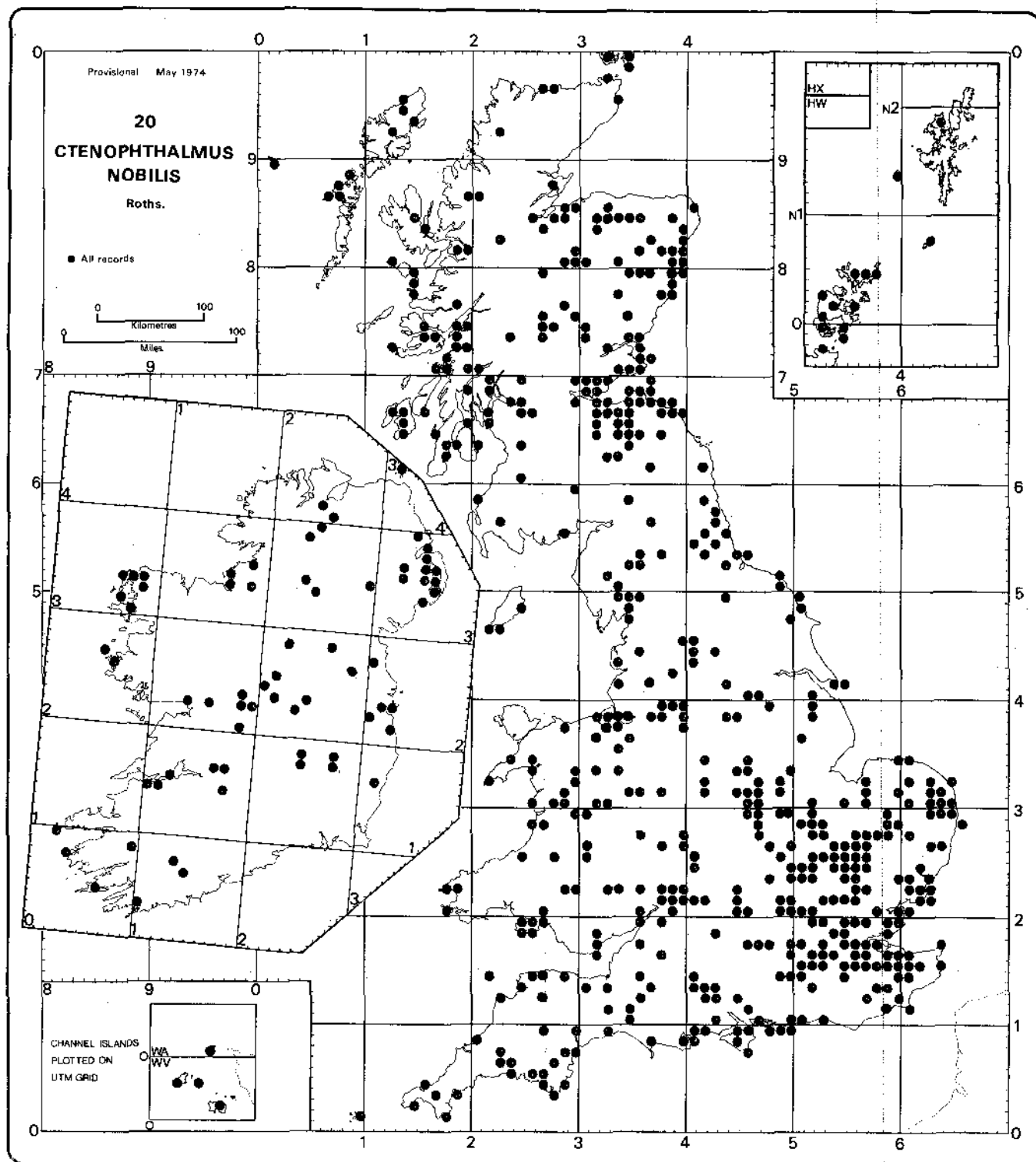
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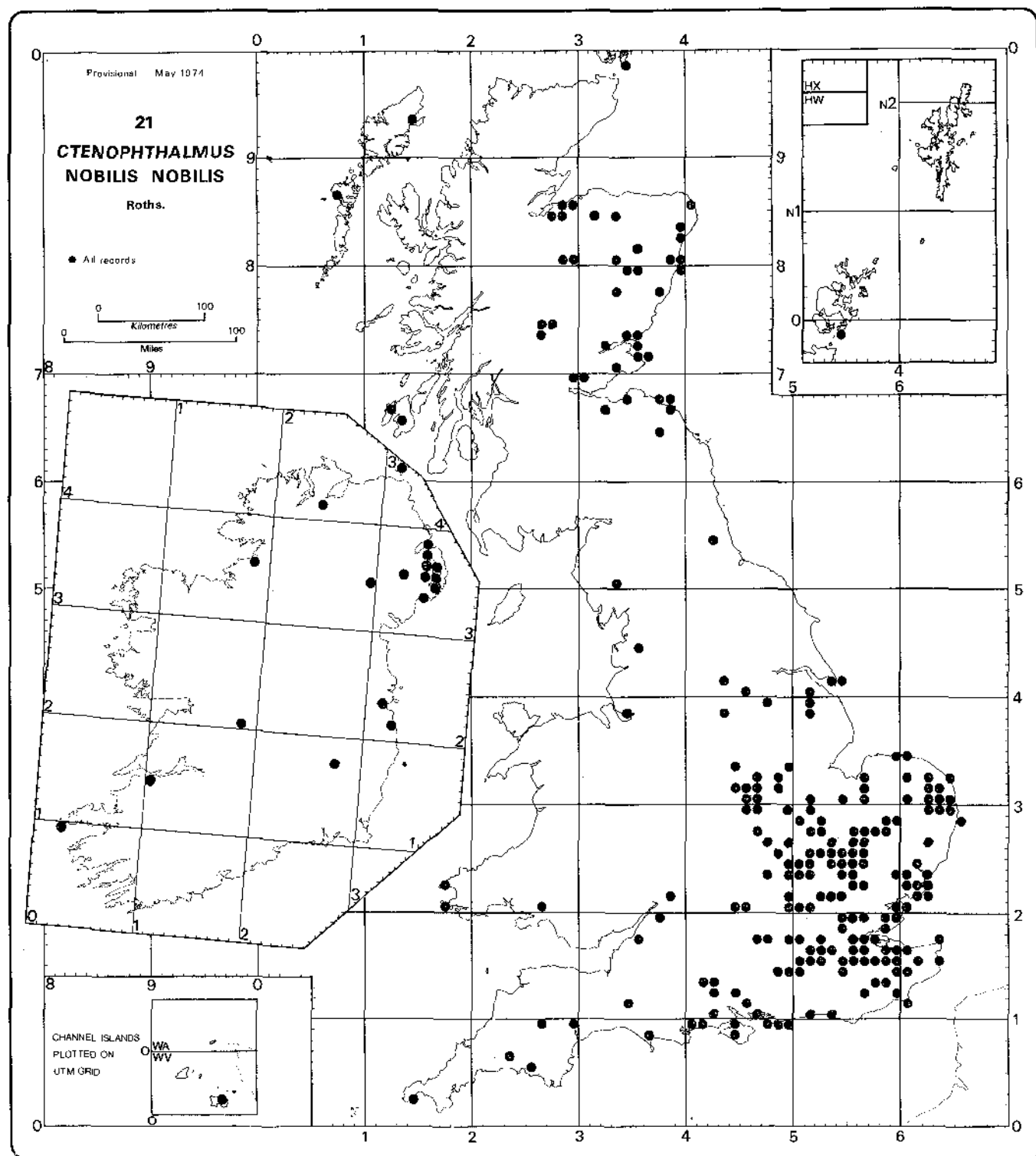
0 100
Kilometres
0 100
Miles

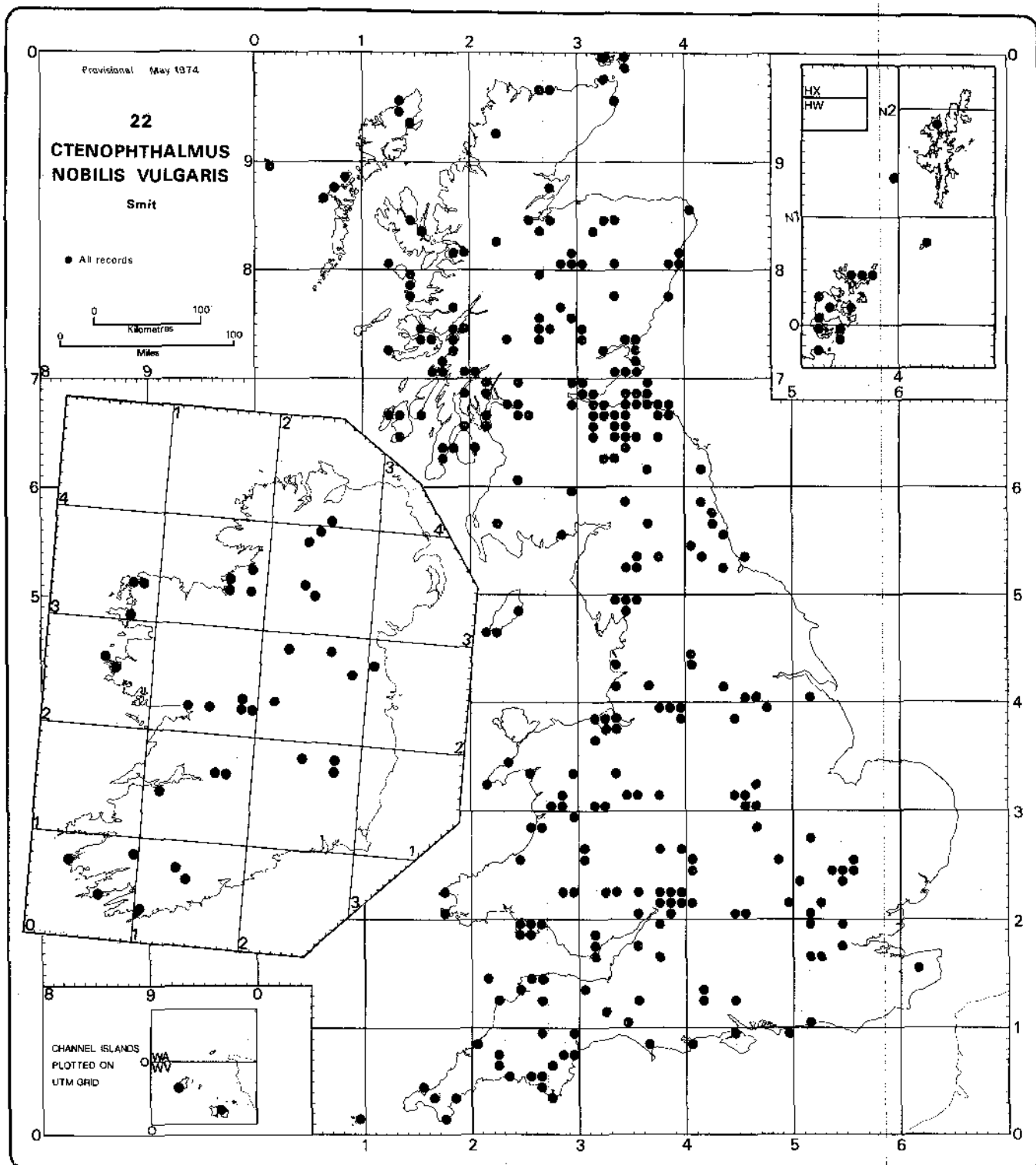


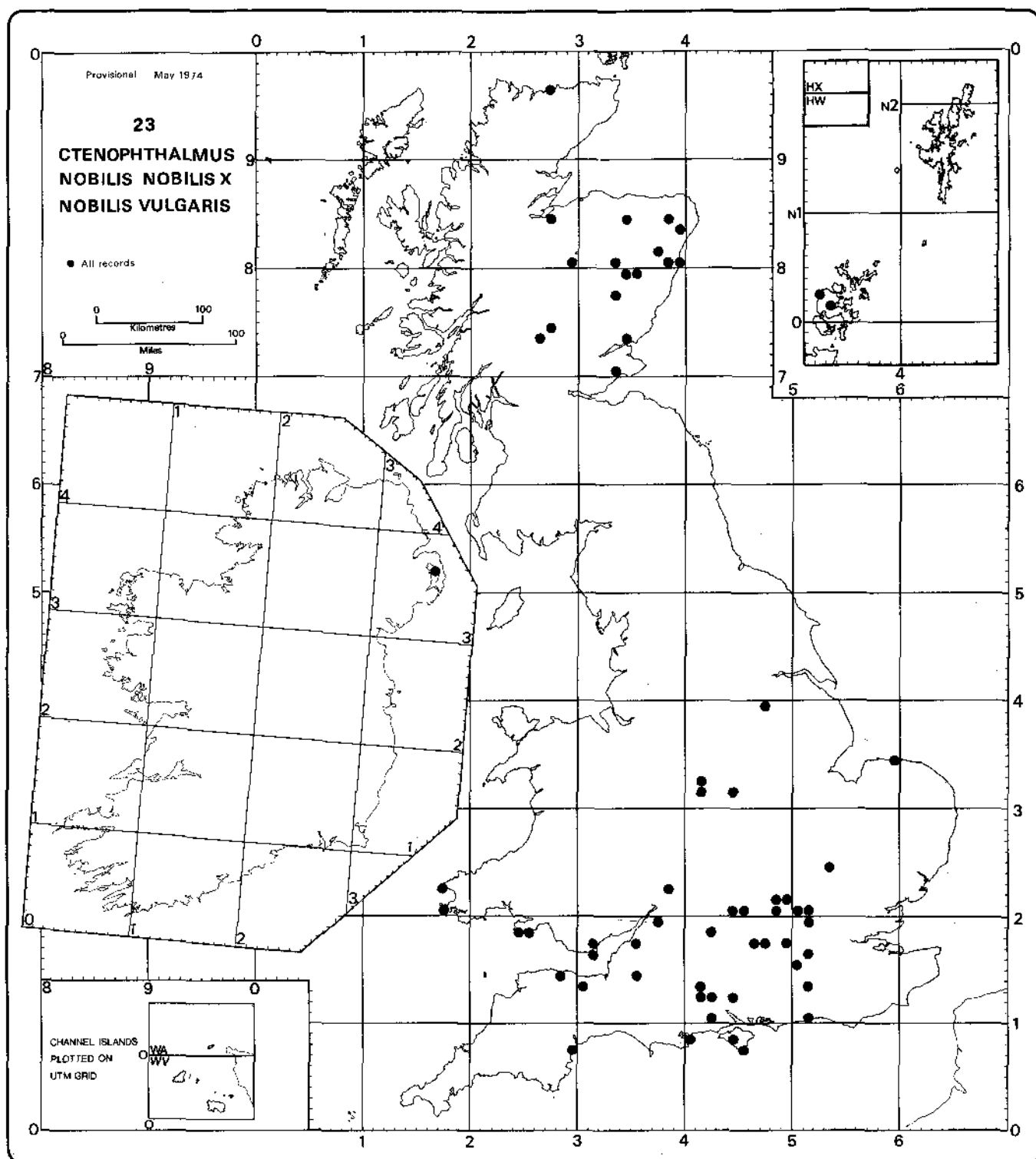


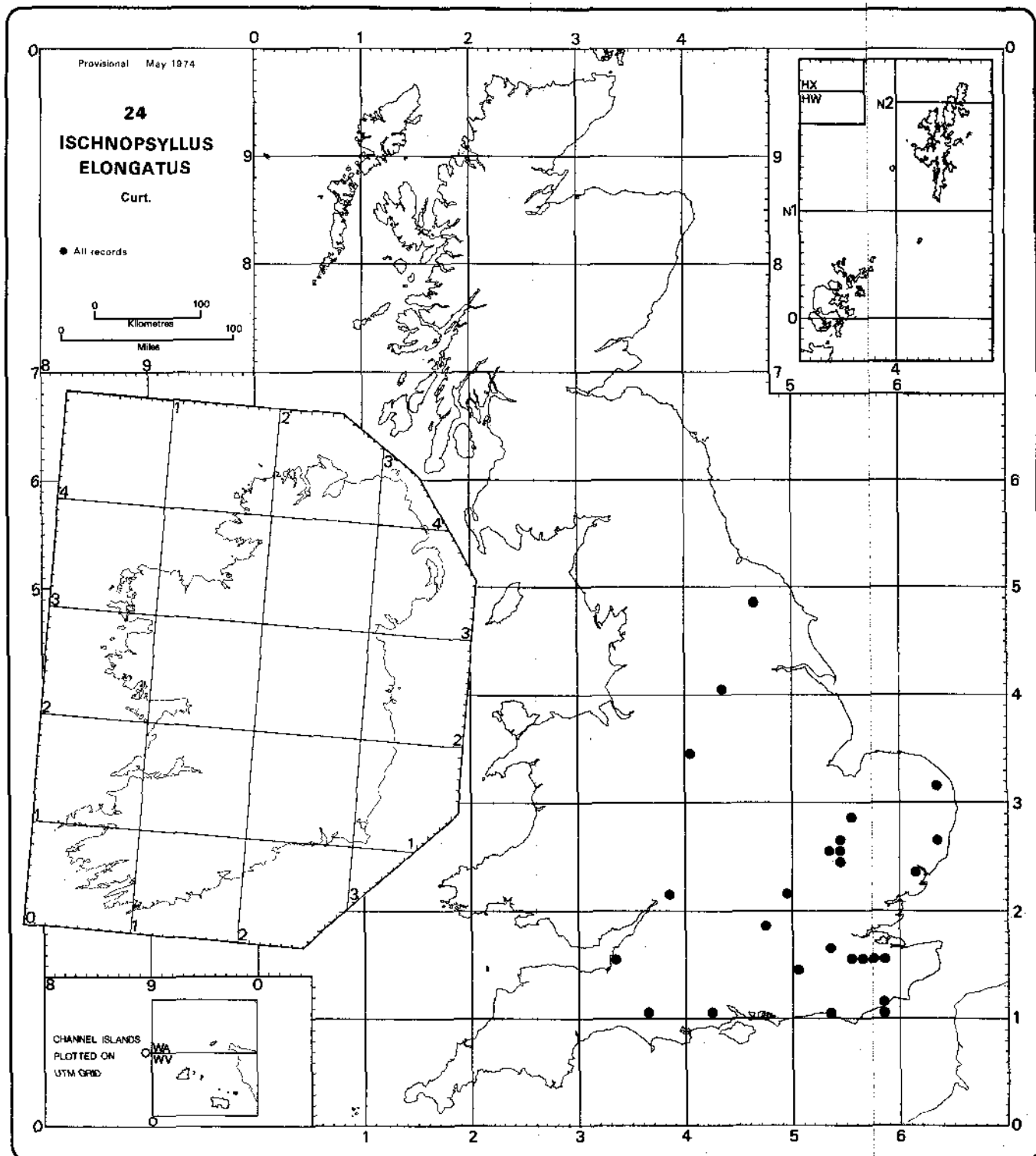


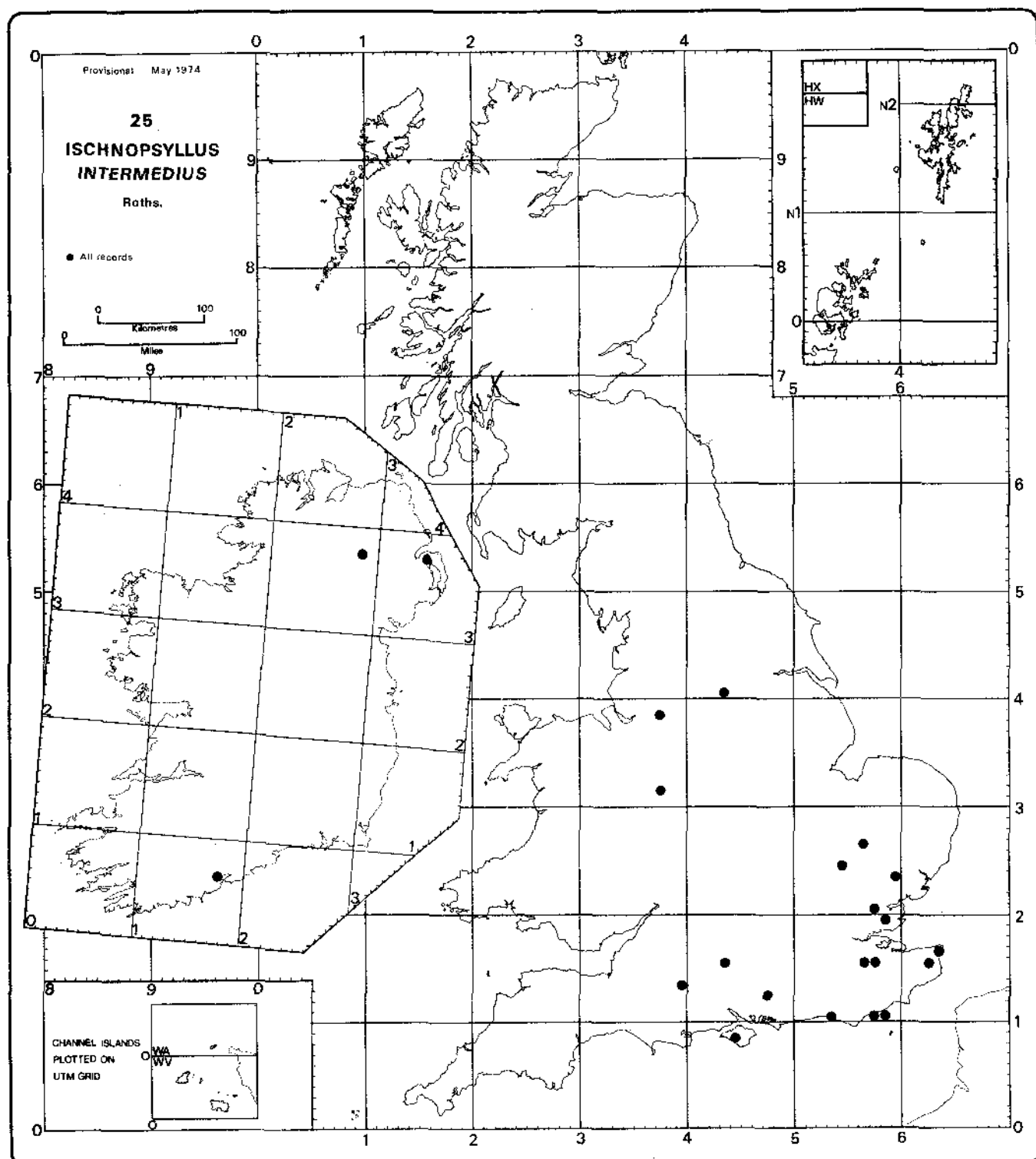


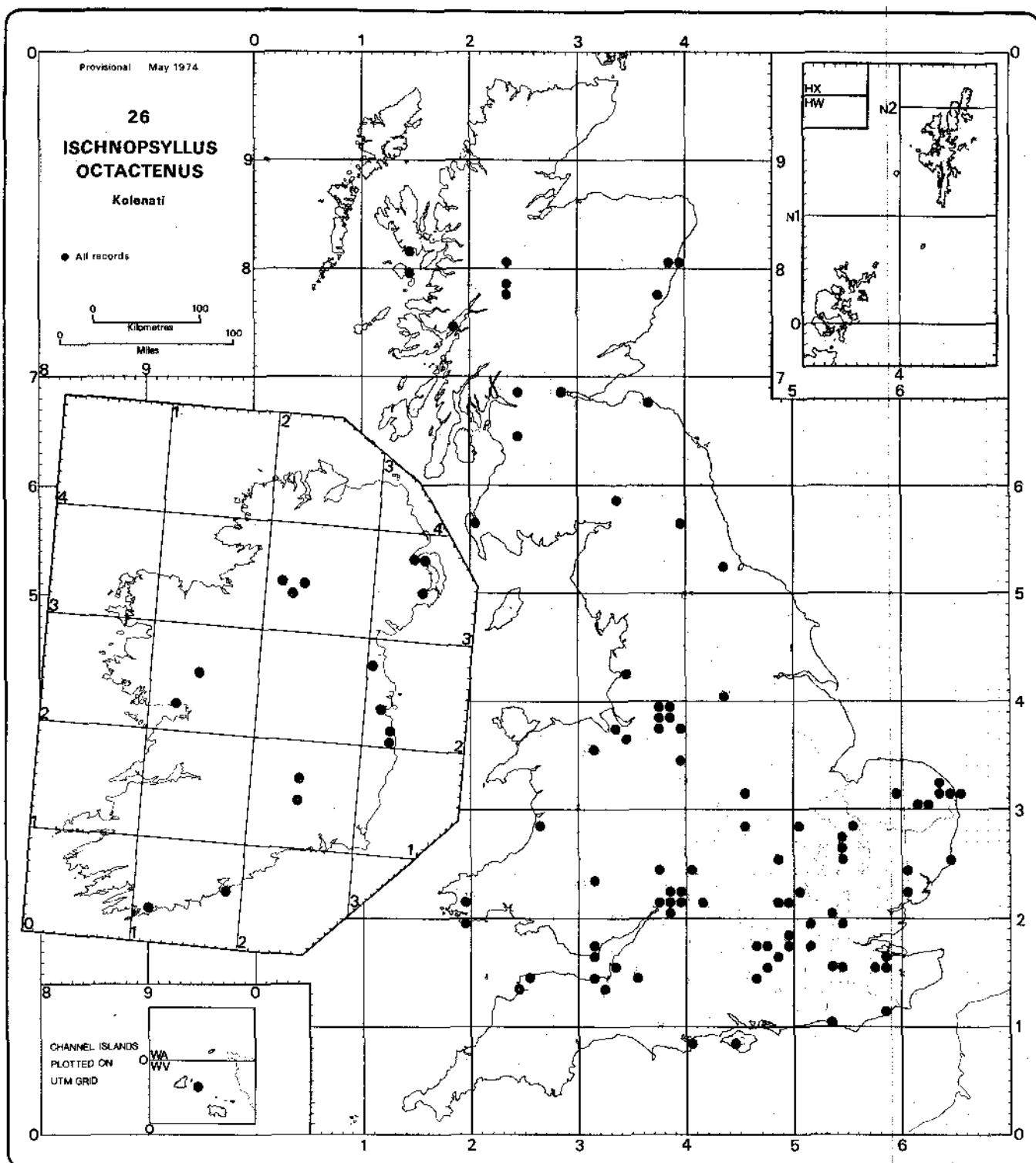












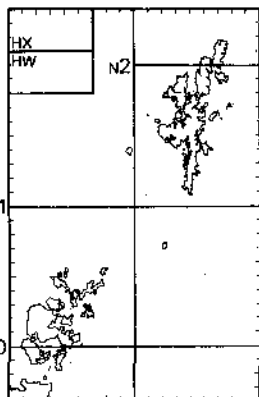
Provisional May 1974

27
**ISCHNOPSYLLUS
SIMPLEX SIMPLEX**

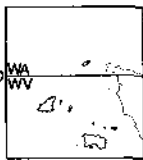
Roths.

● All records

0 100
Kilometres
0 100
Miles

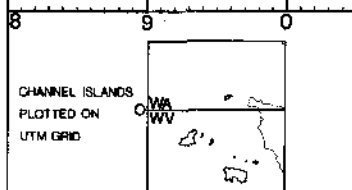
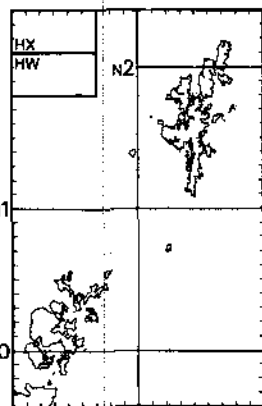


CHANNEL ISLANDS
PLOTTED ON
UTM GRID



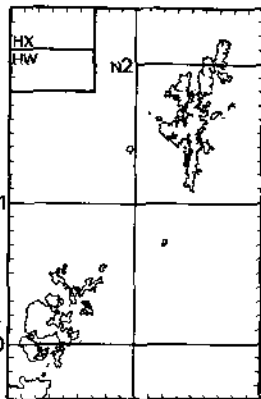
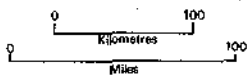
28
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HEXACTENUS

- All records

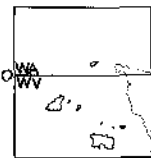


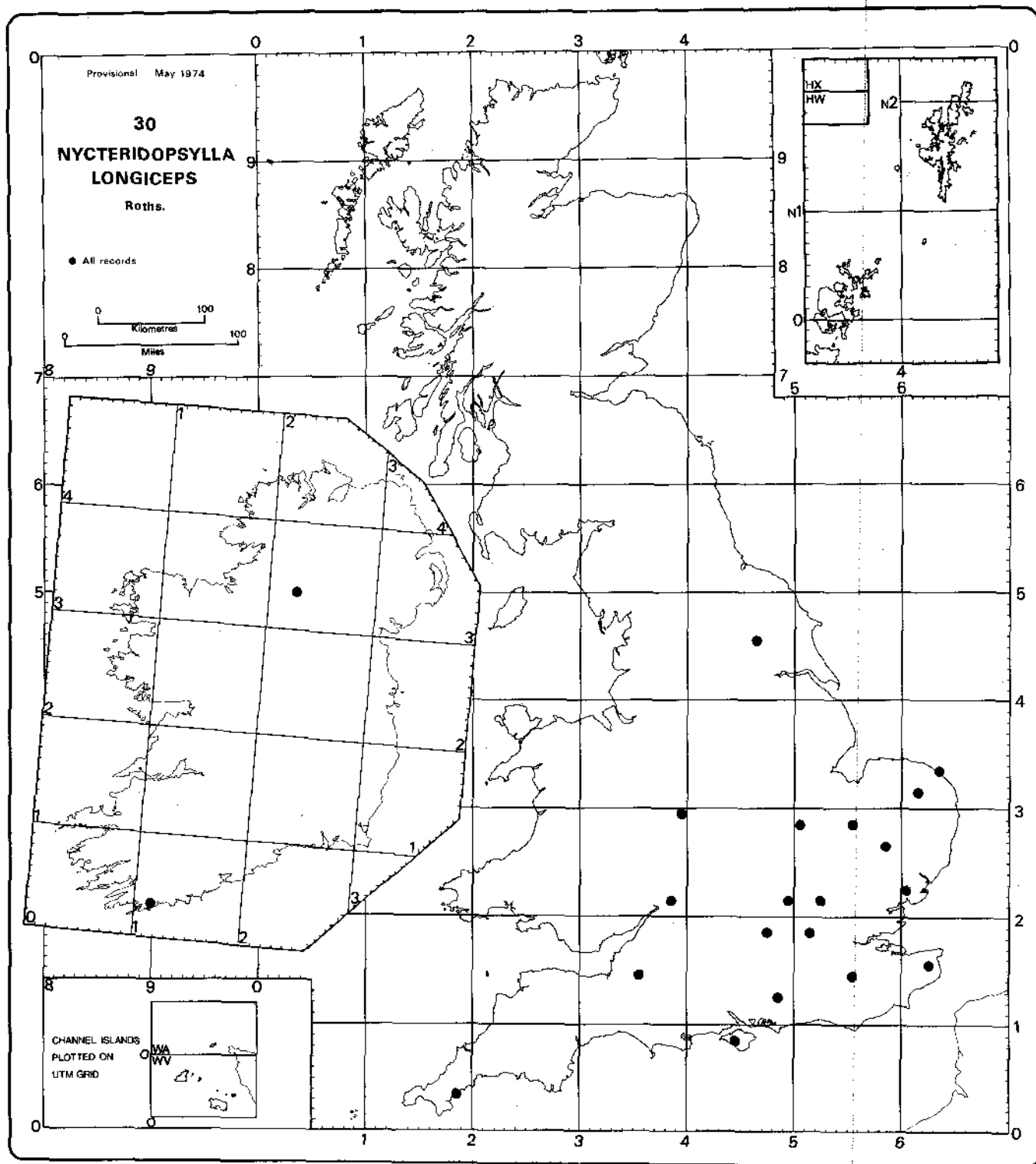
29
NYCTERIDOPSYLLA
EUSARCA
Campf

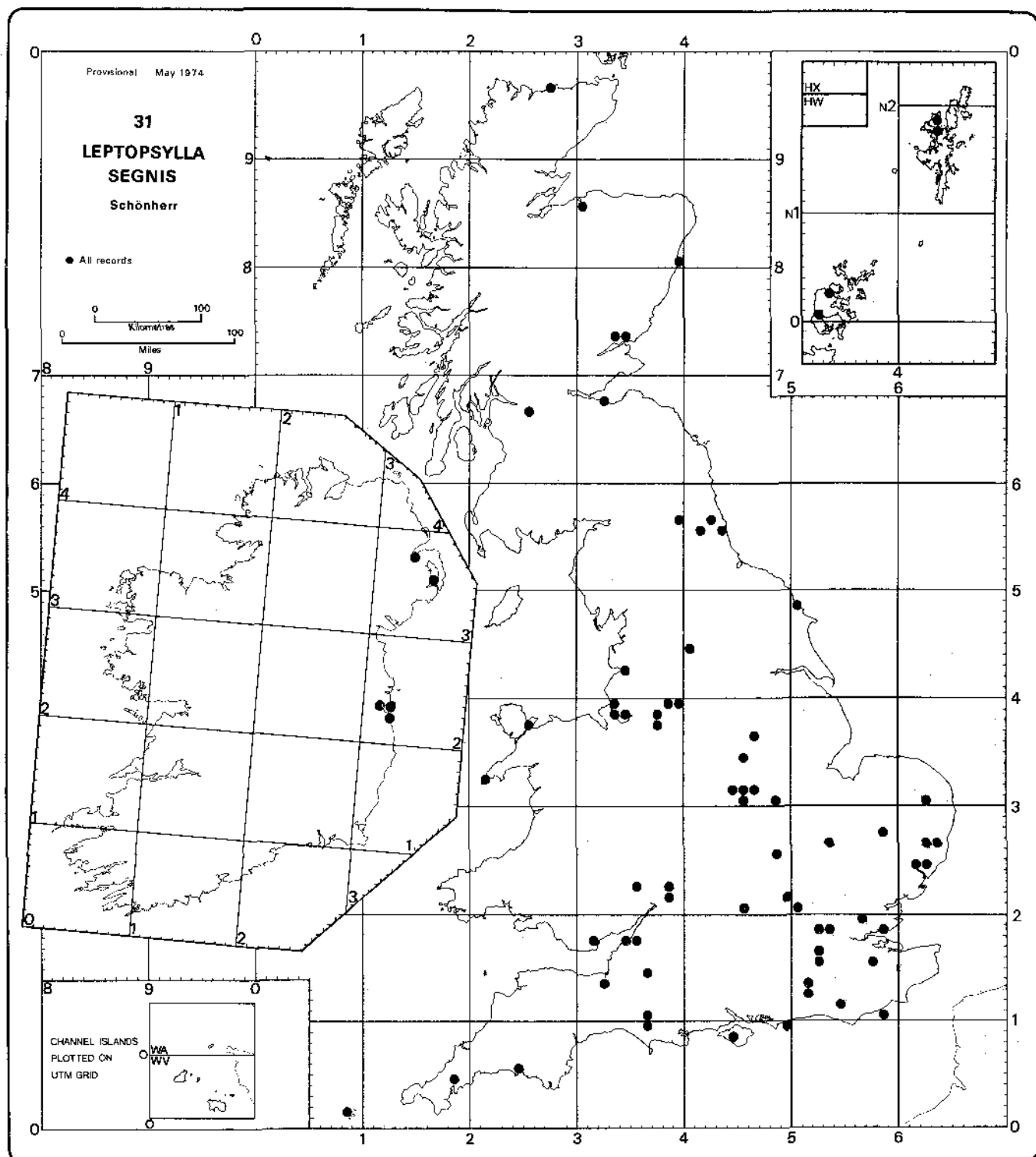
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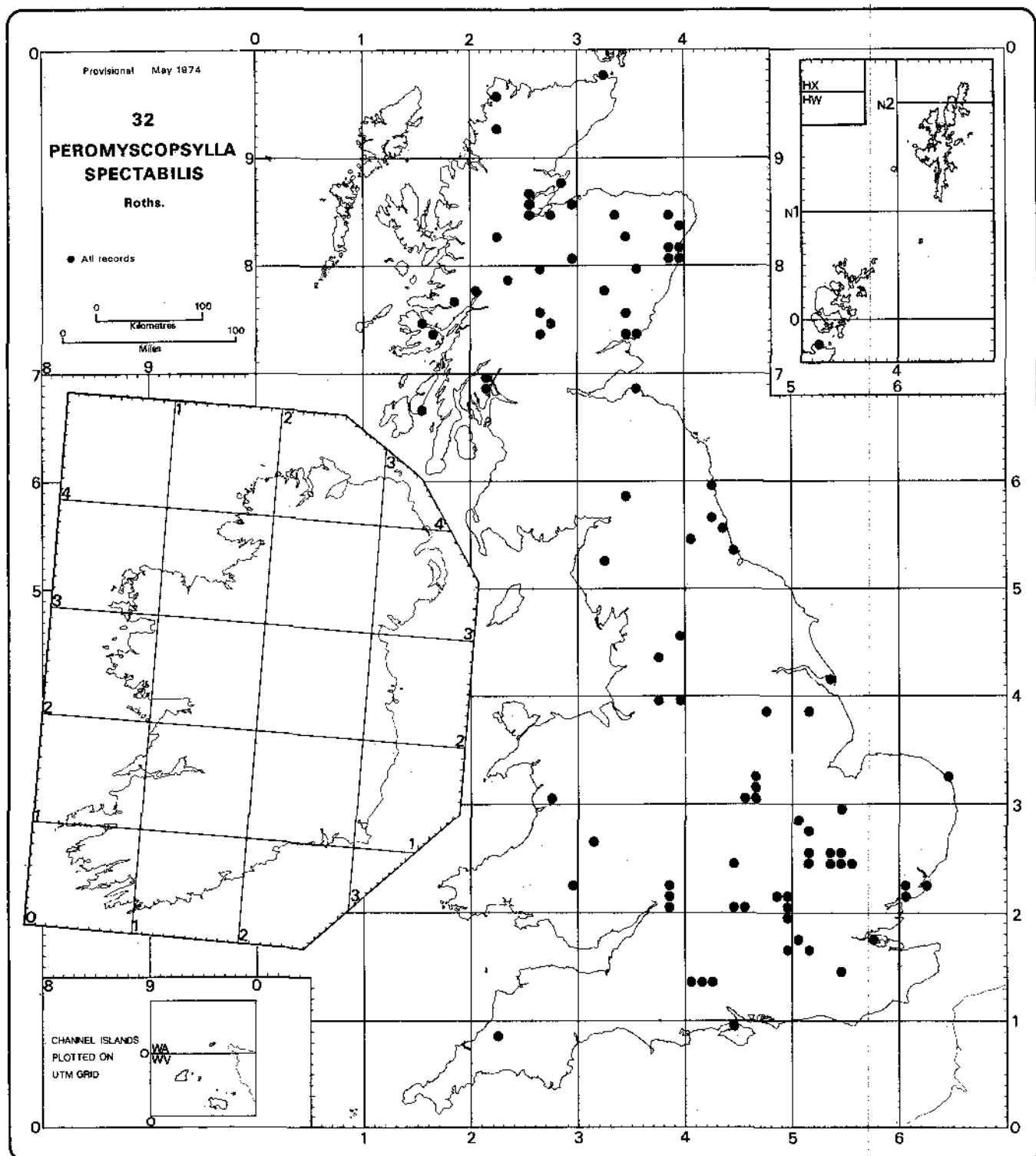


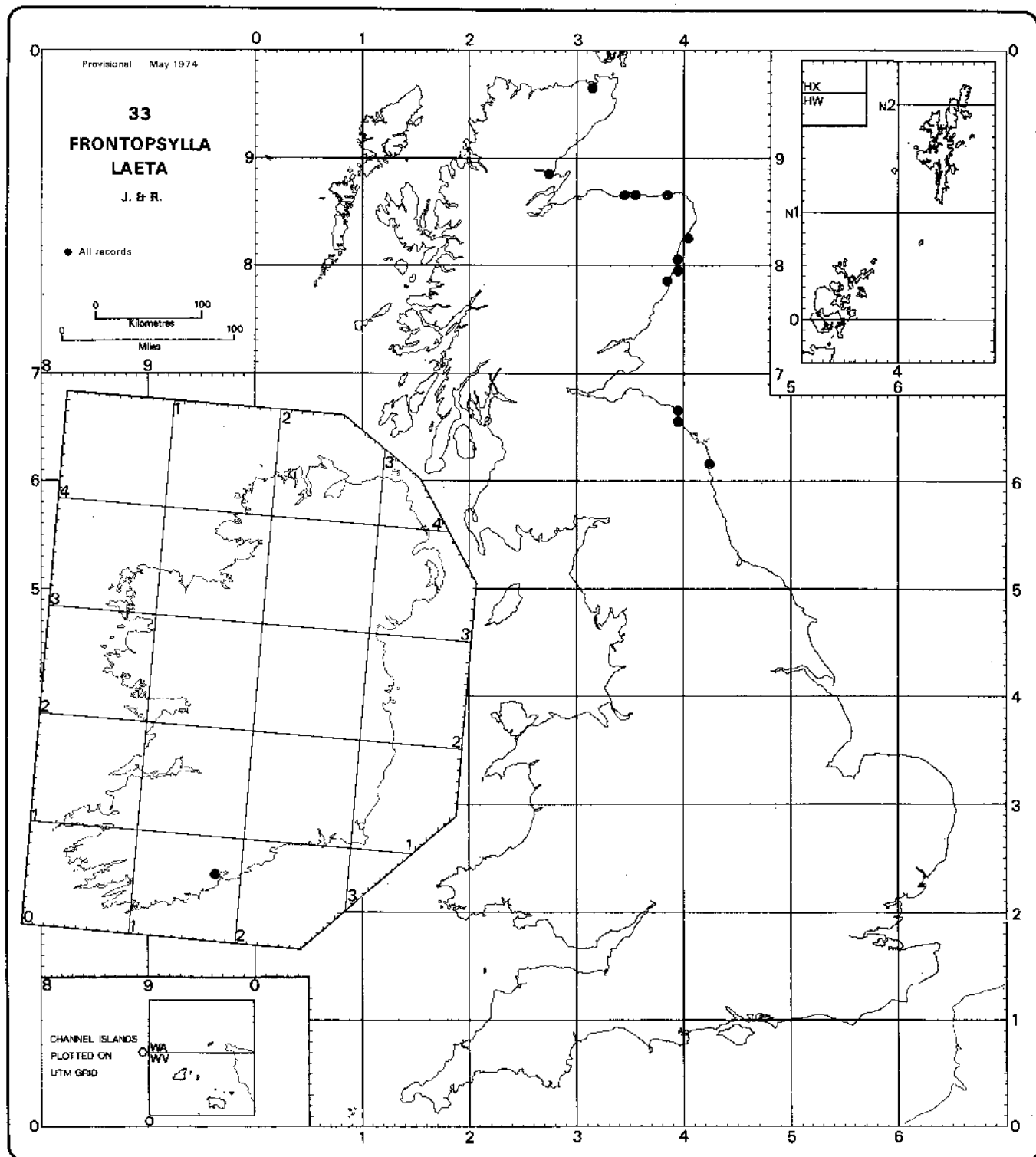
CHANNEL ISLANDS
PLOTTED ON
UTM GRID

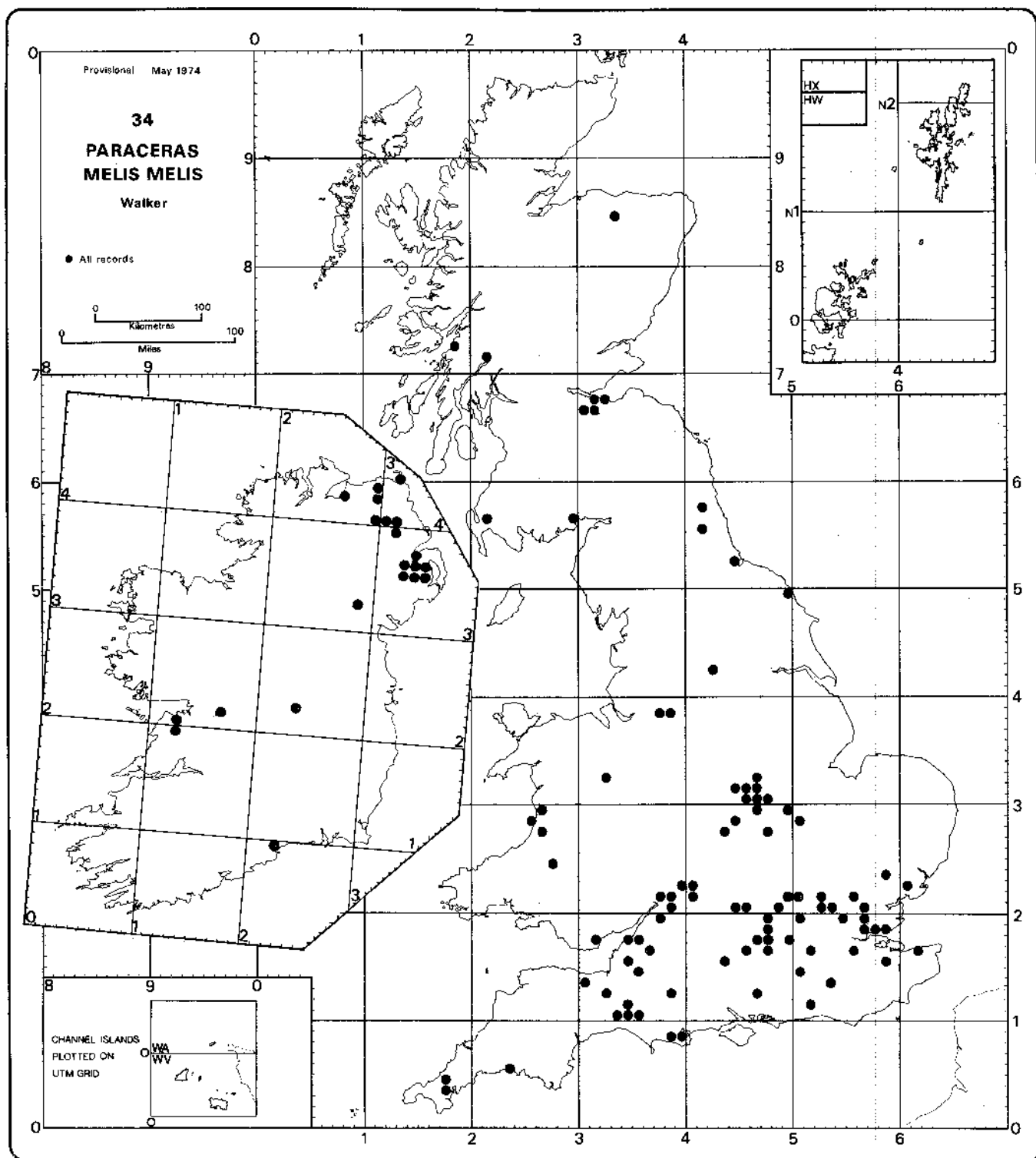


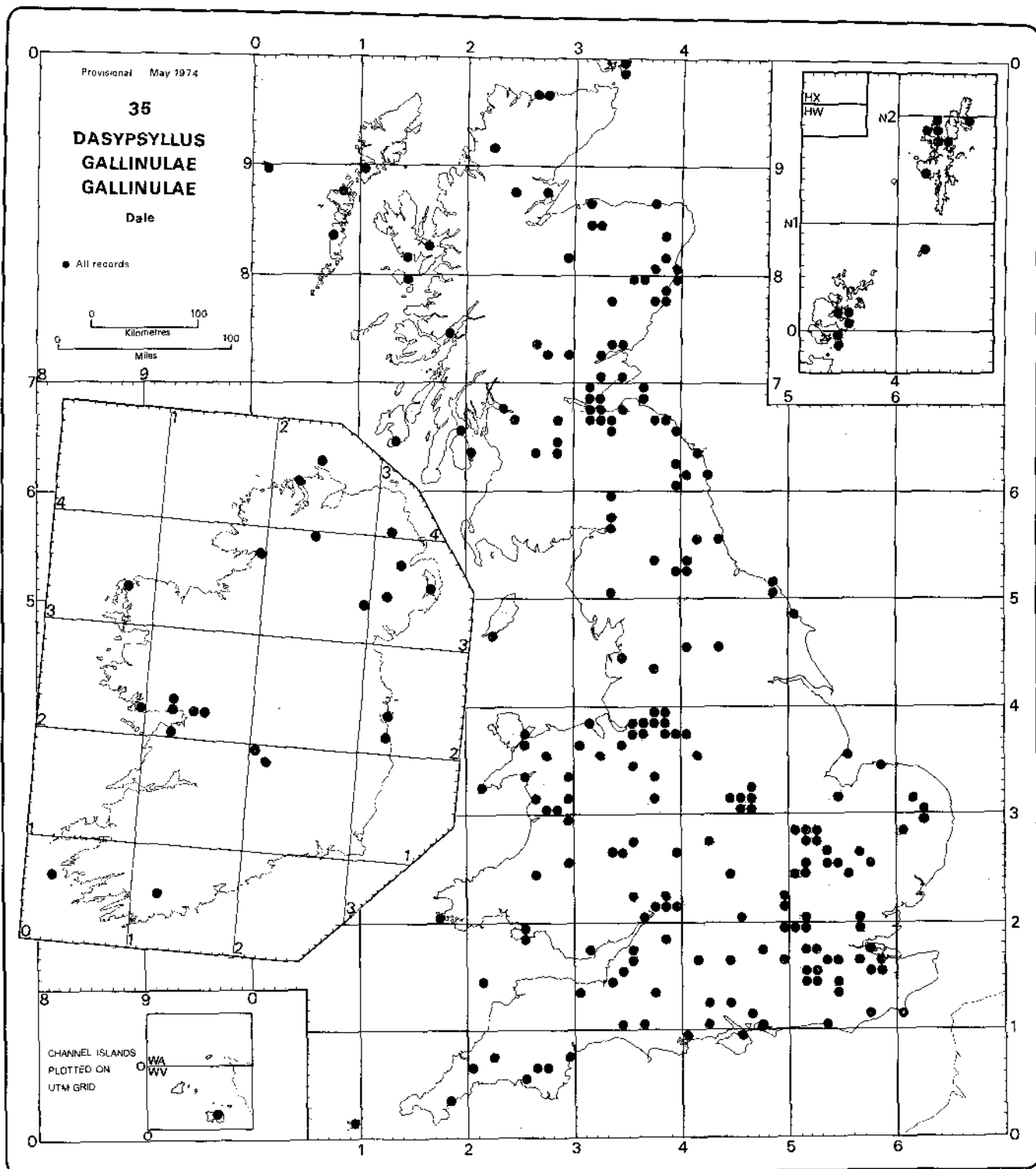


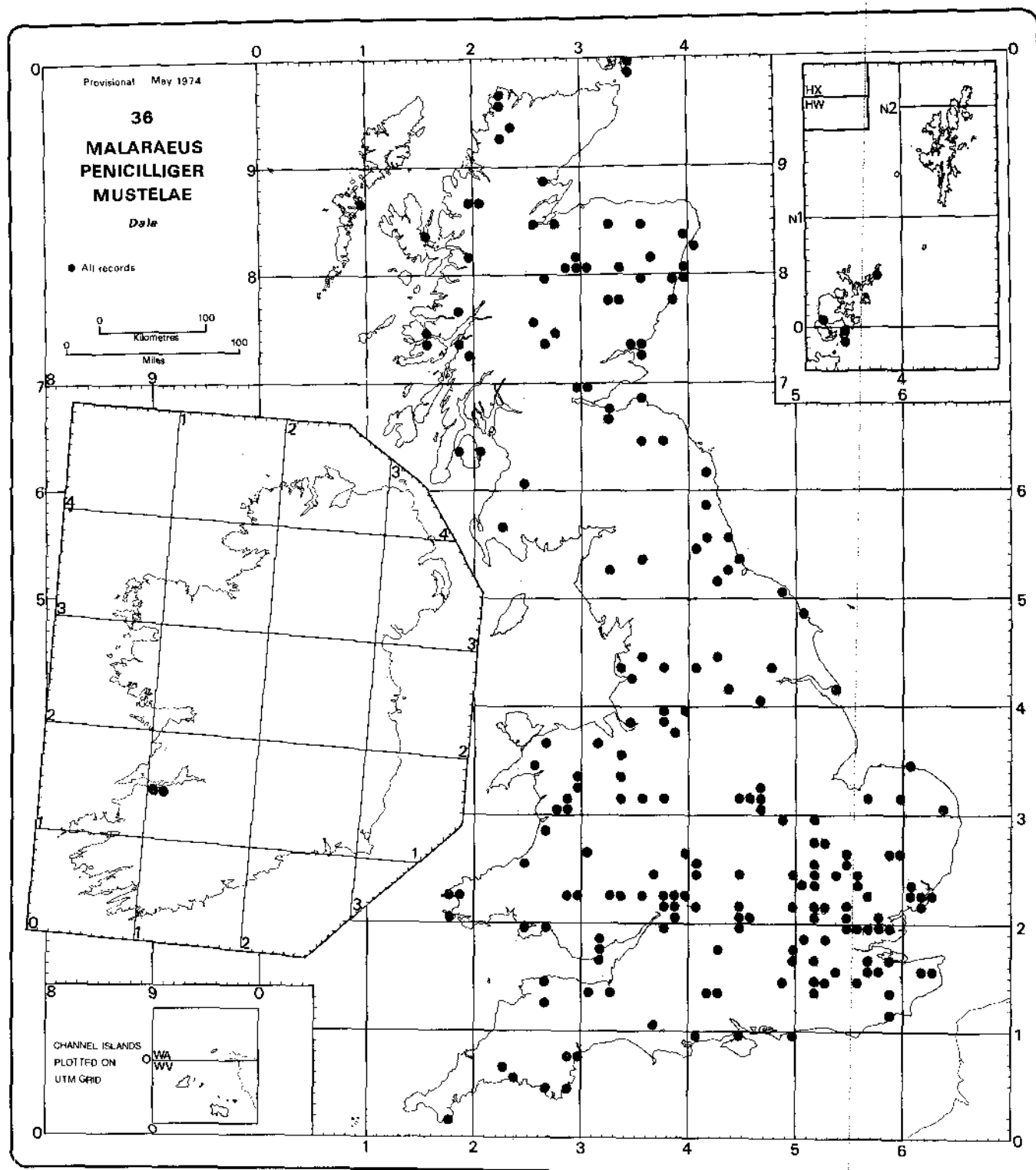


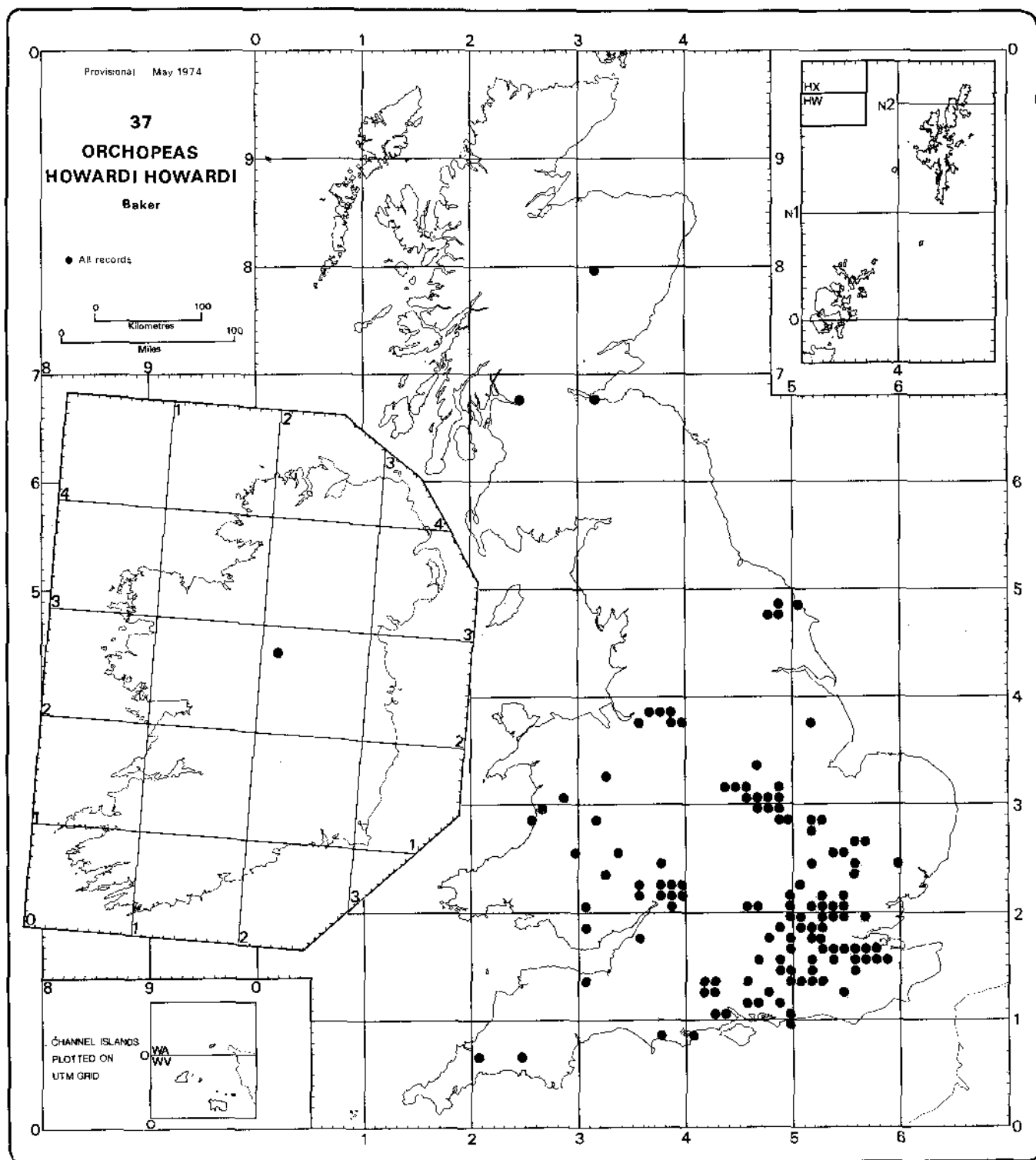


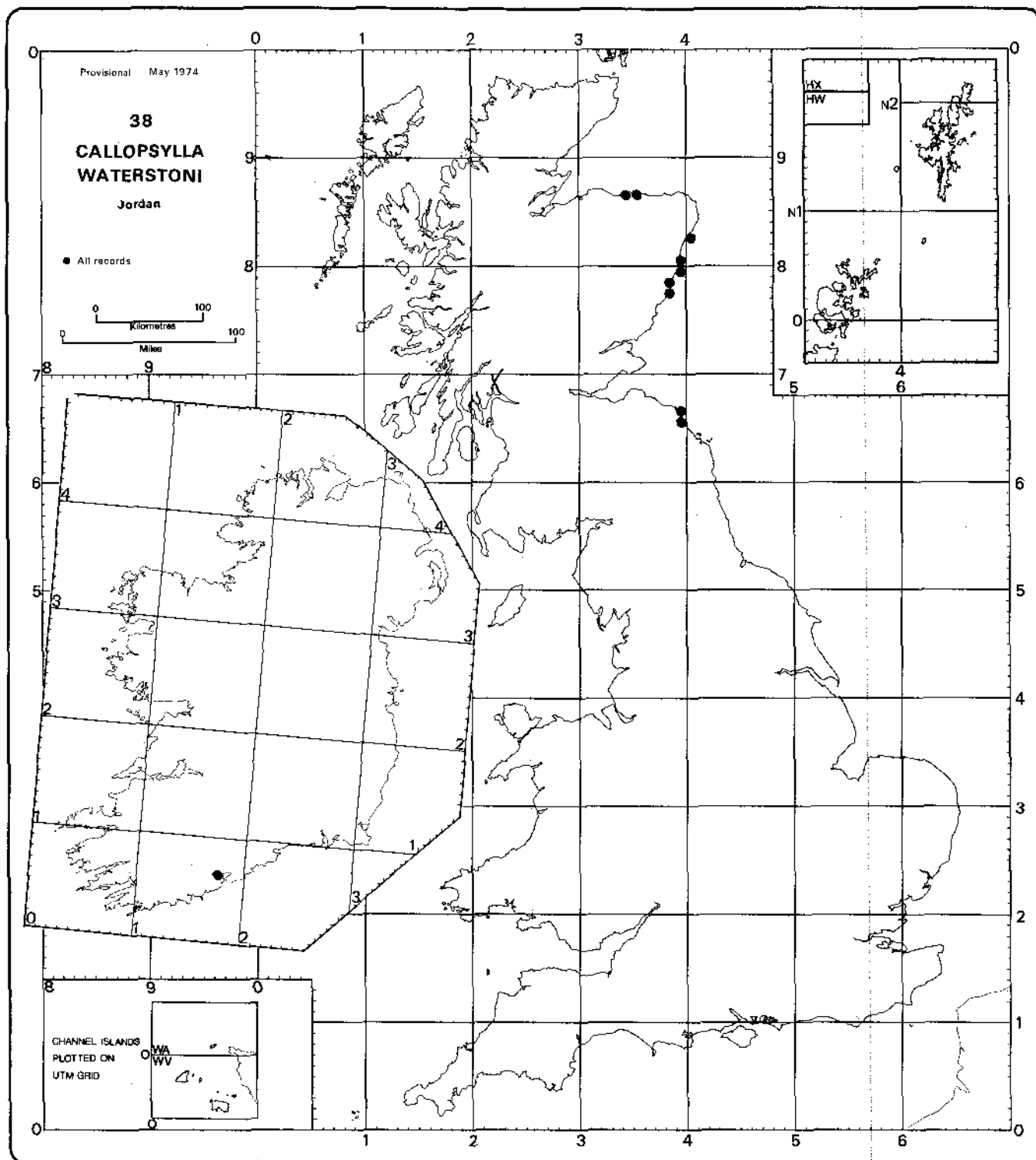


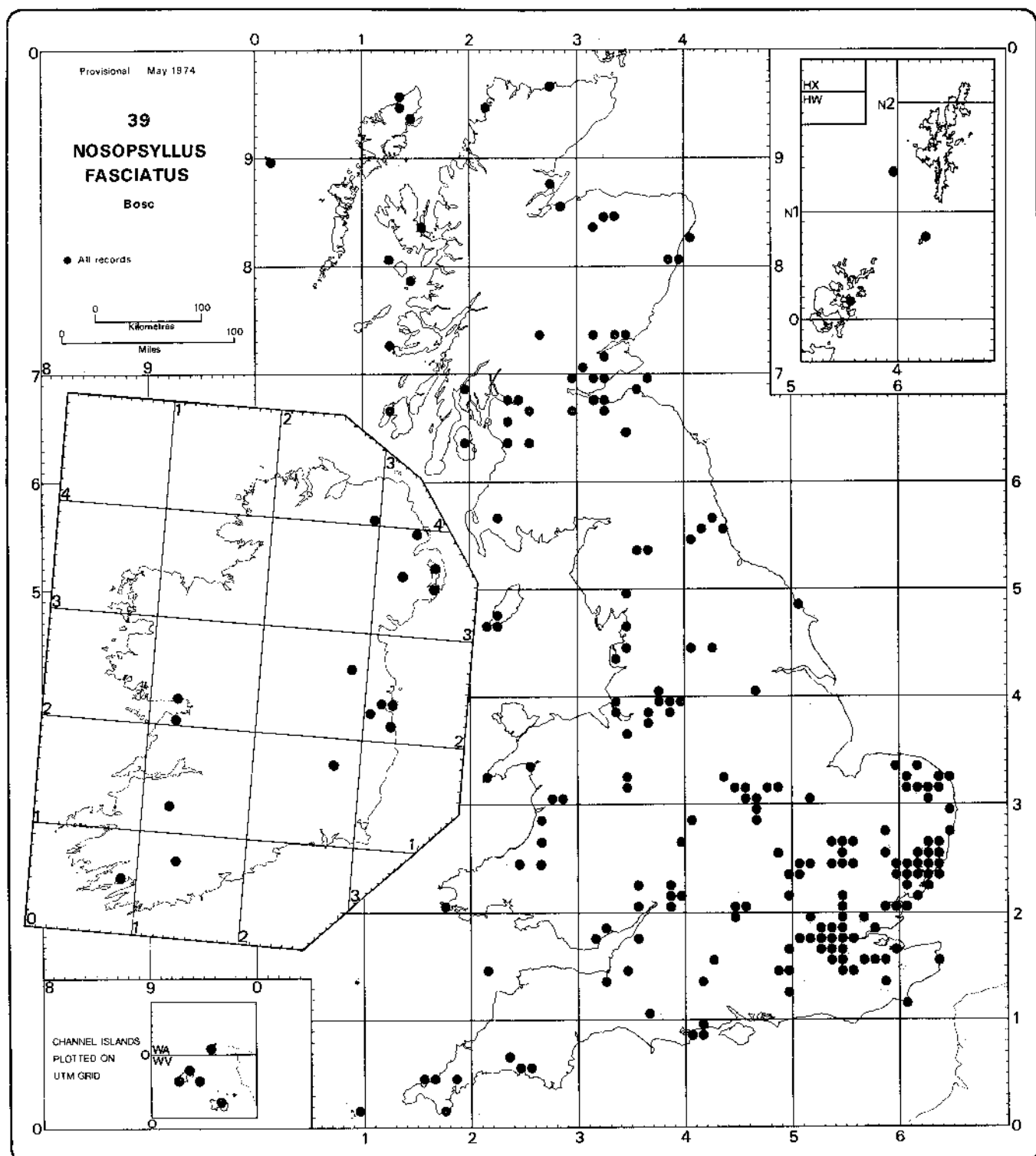


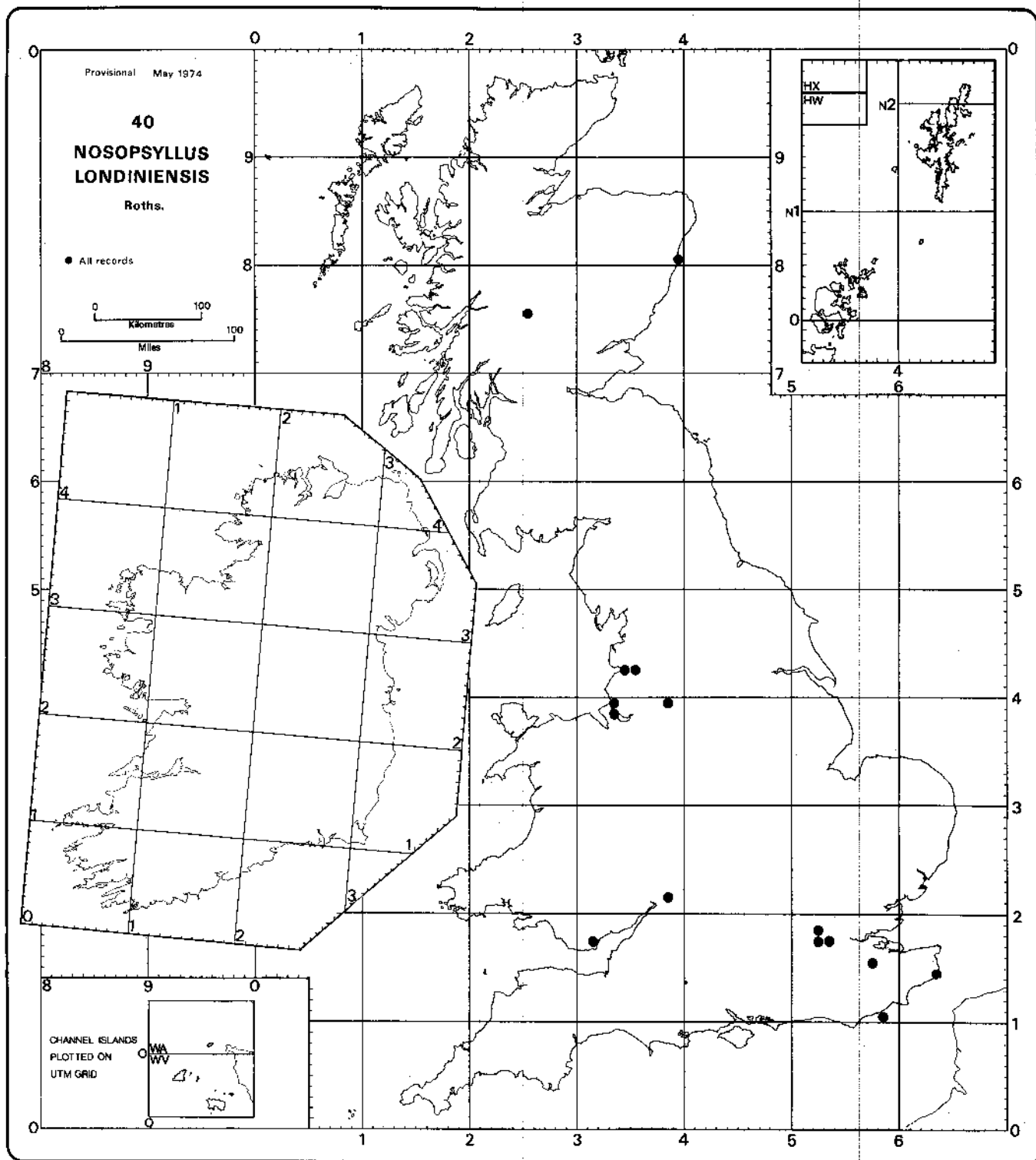


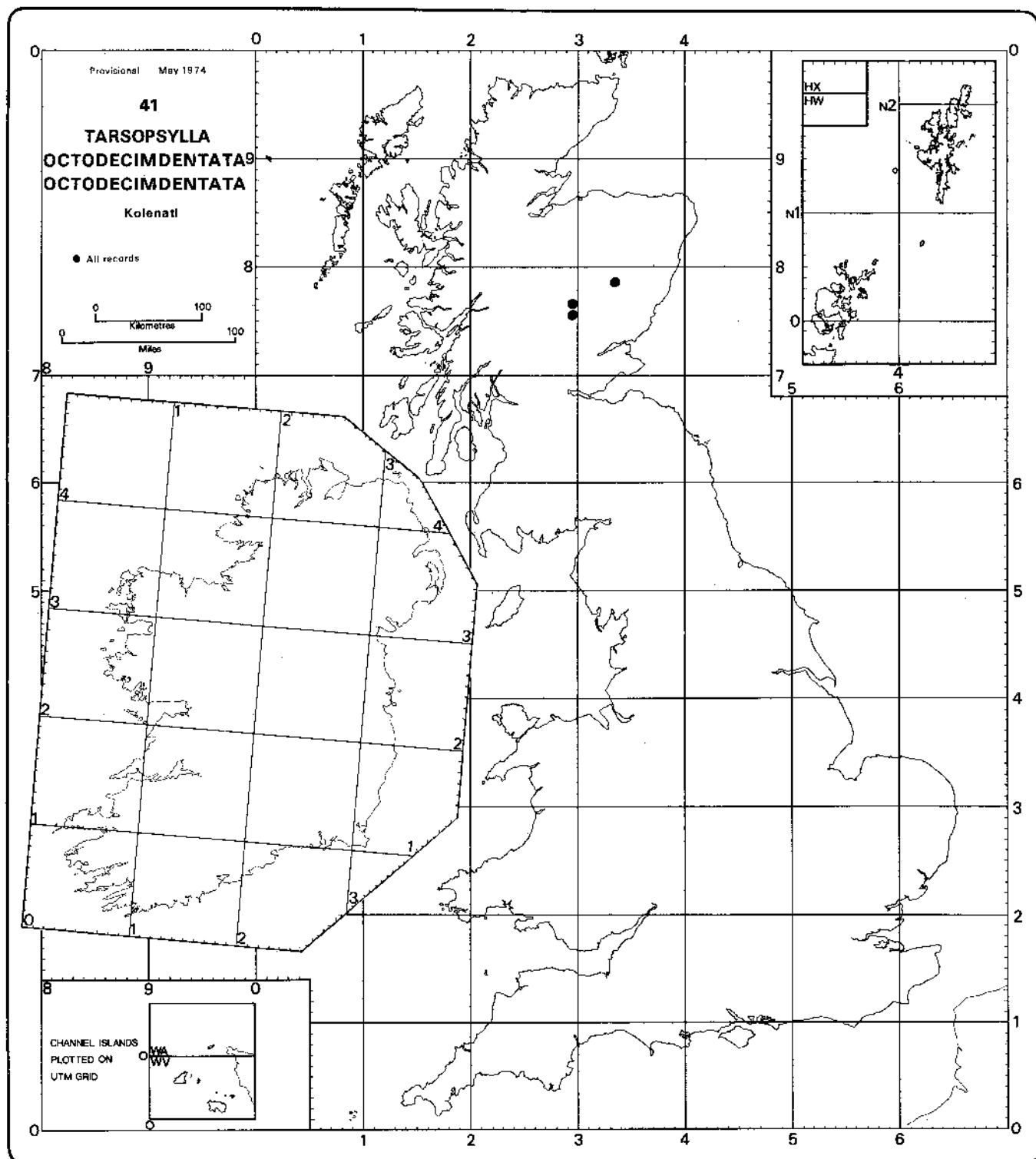


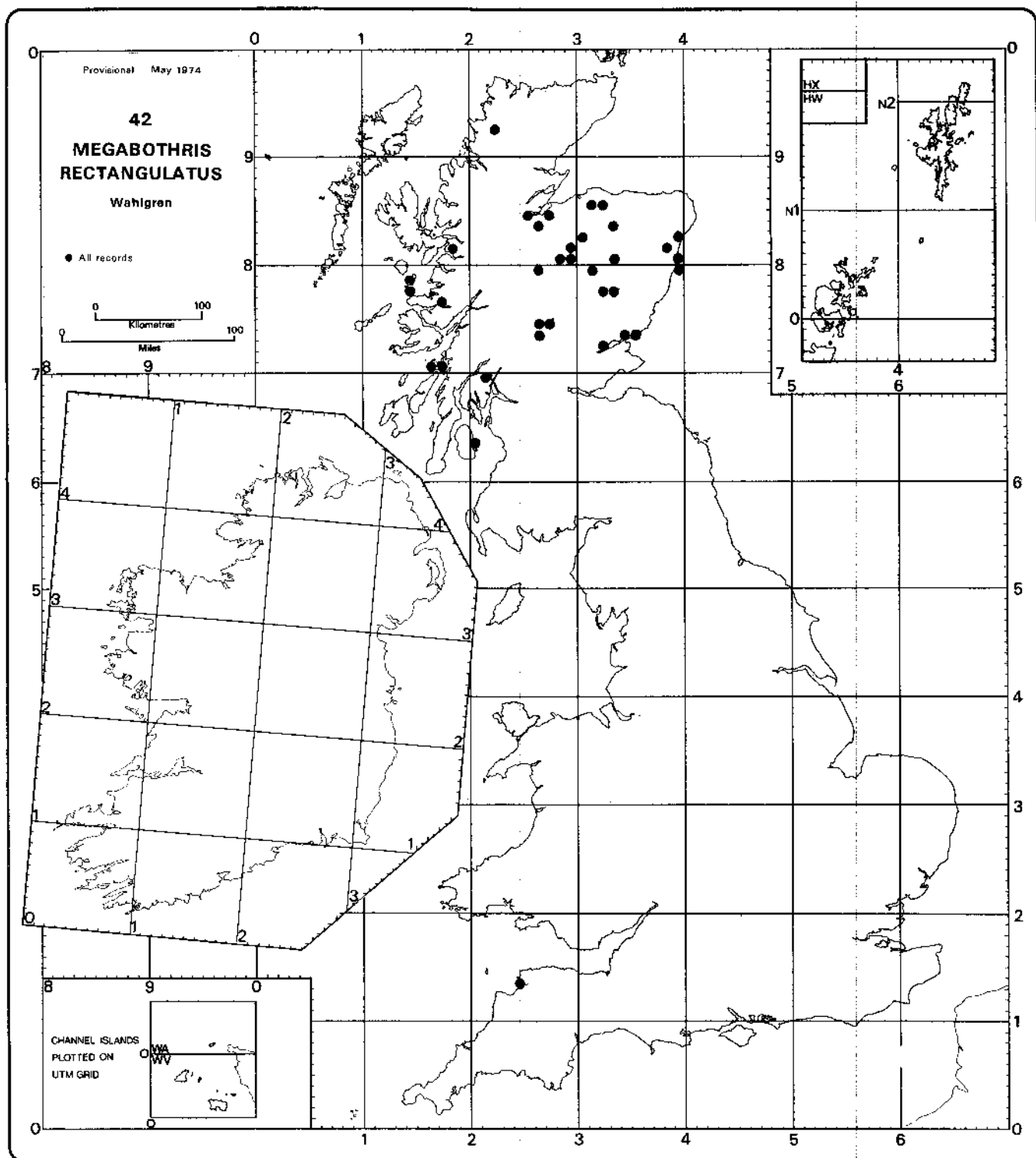


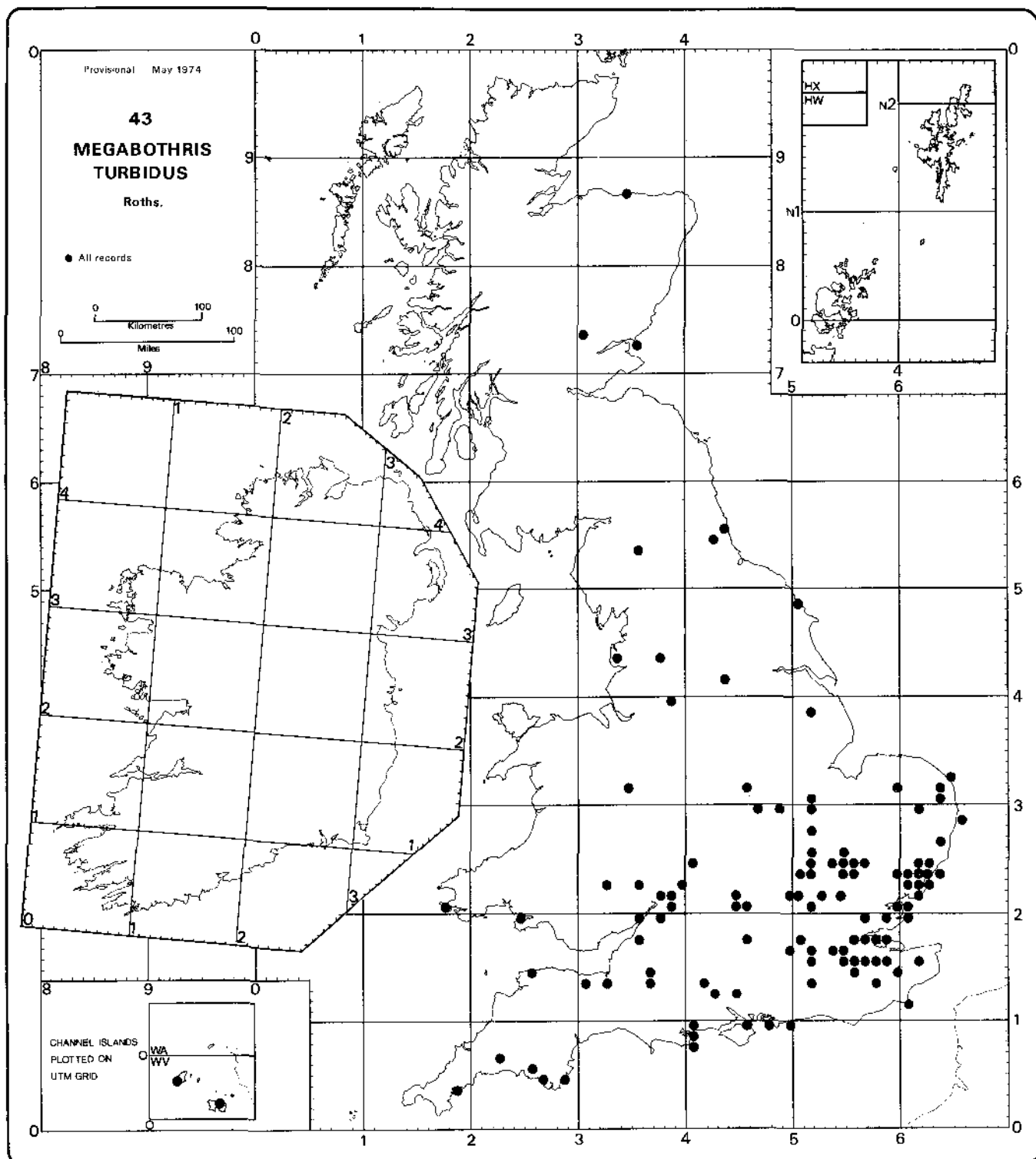


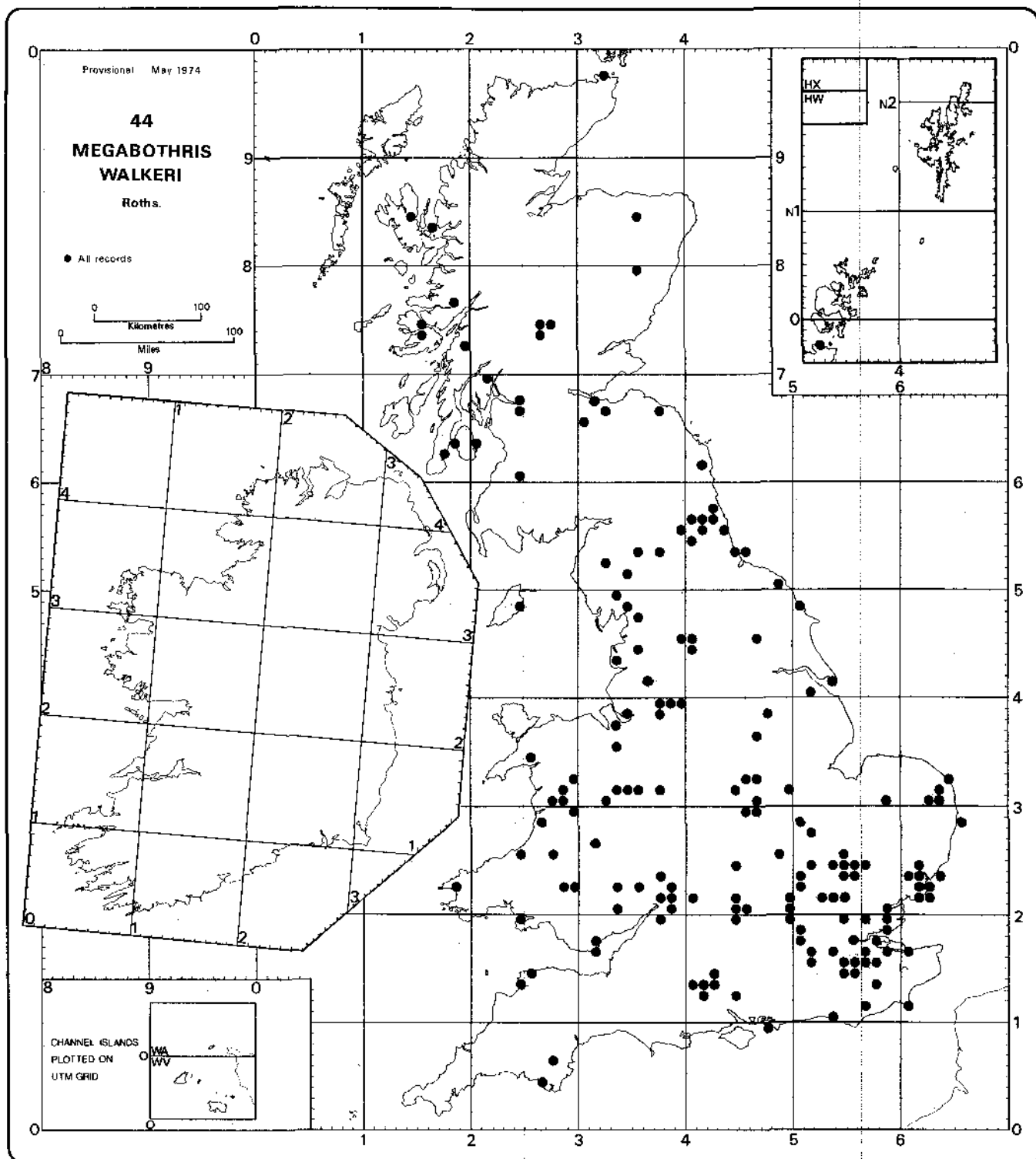


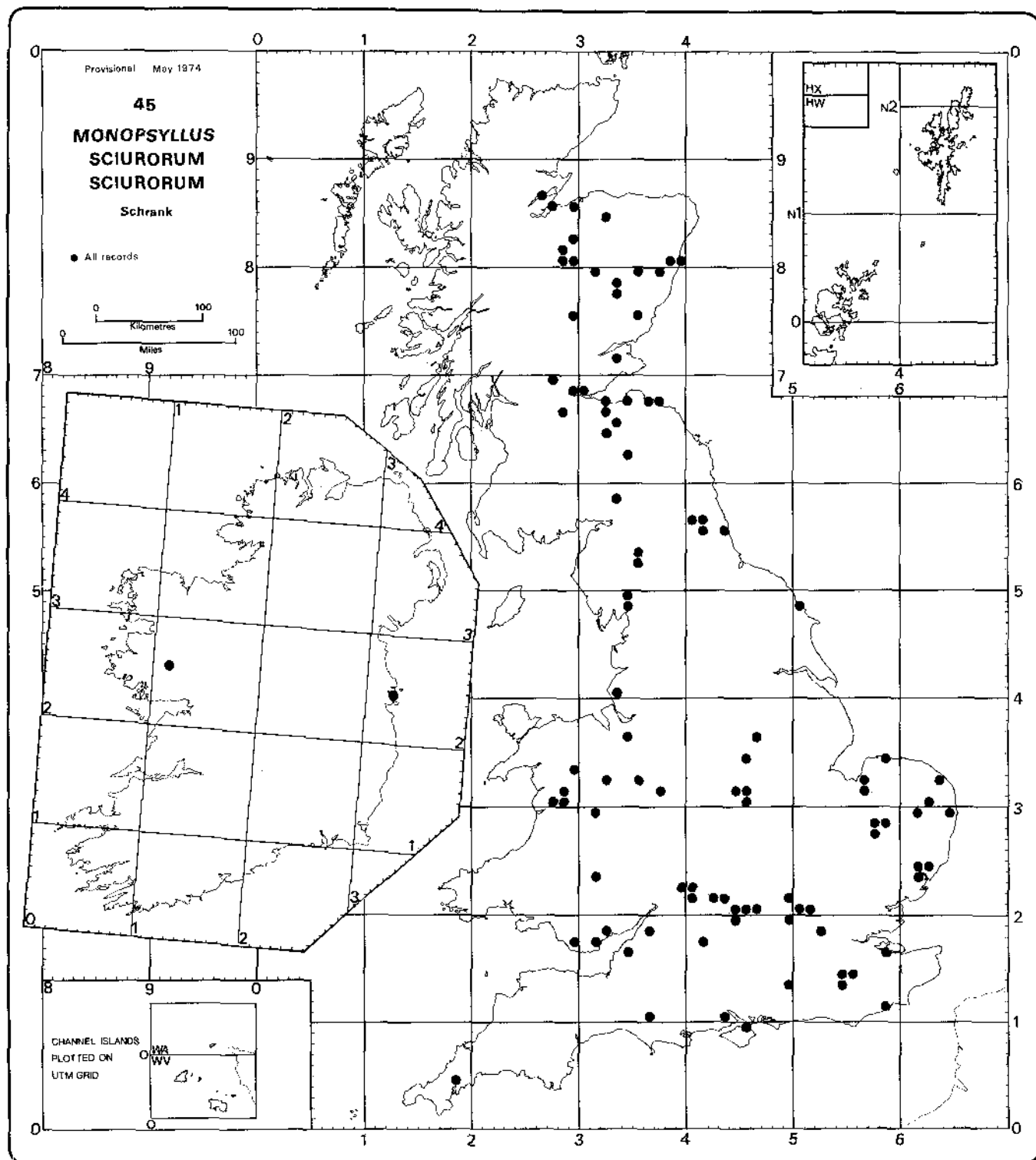


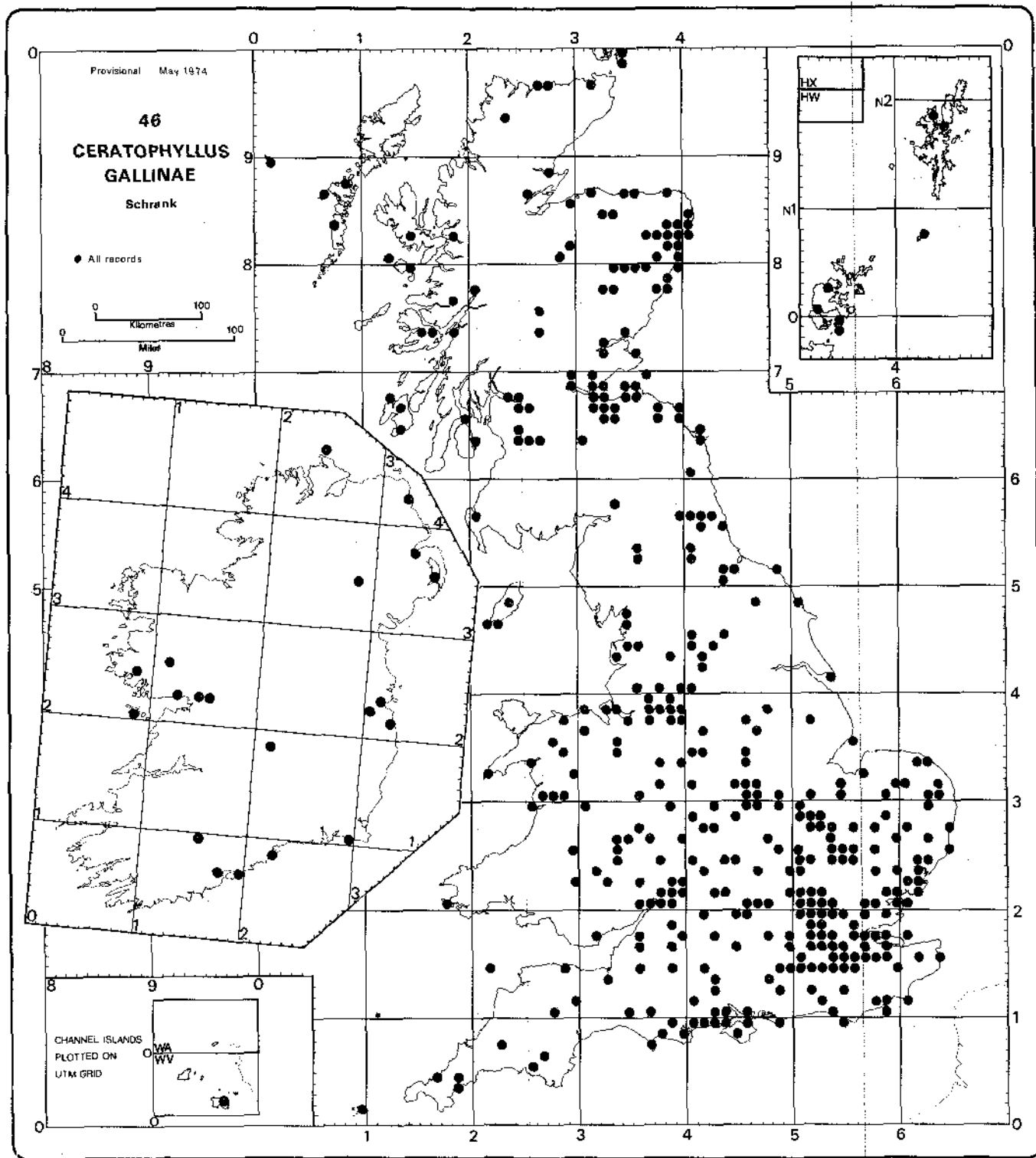


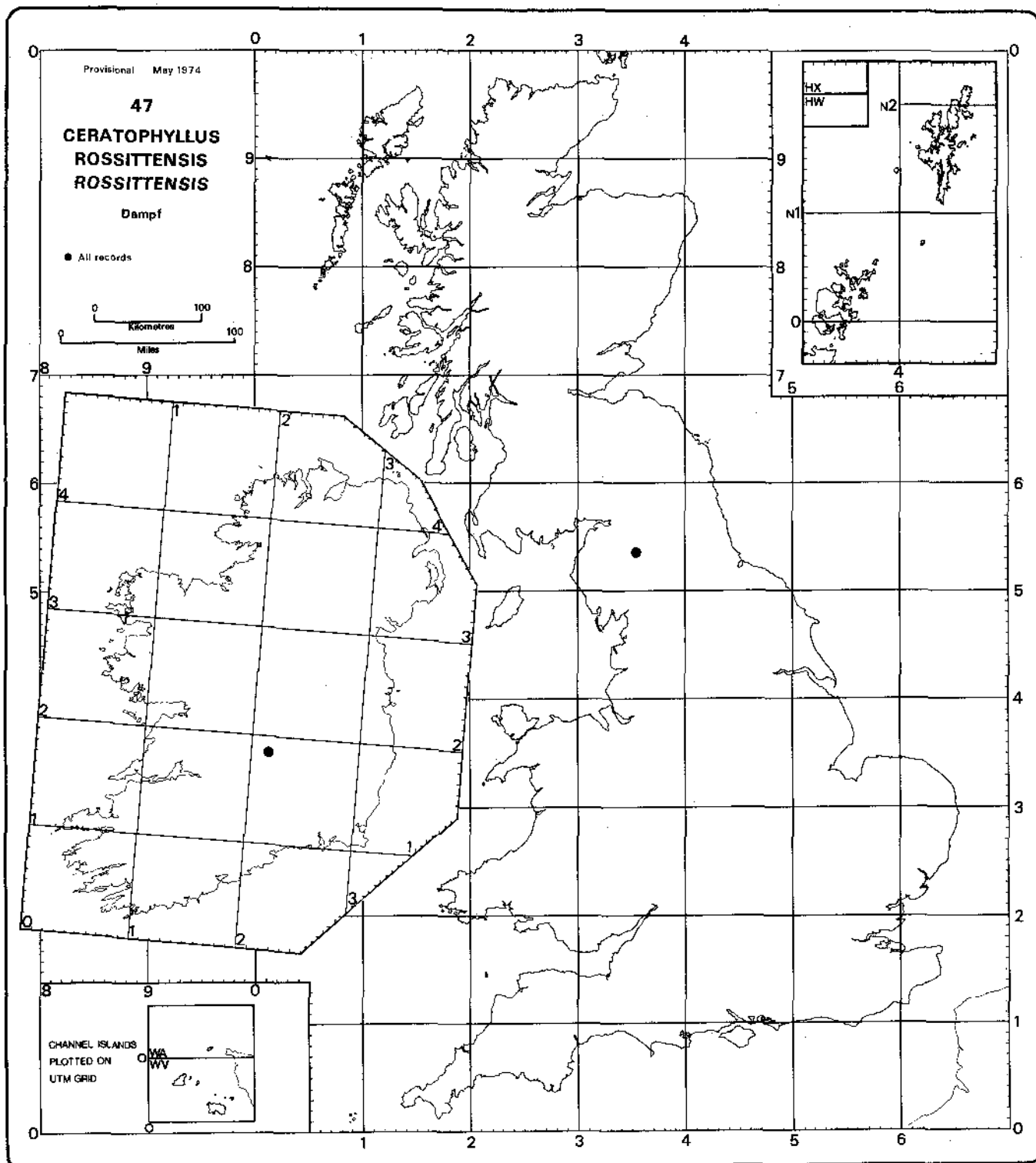


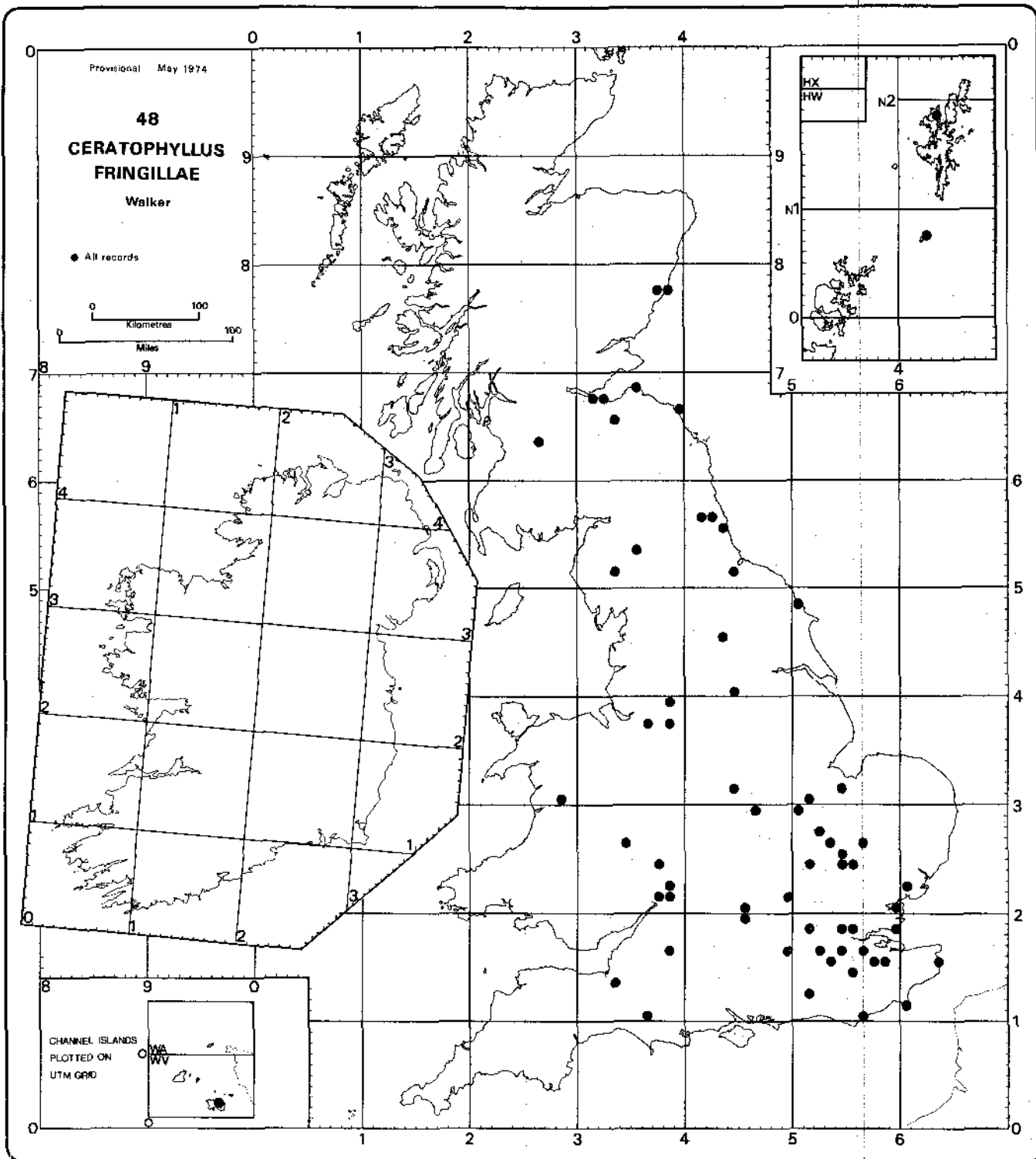


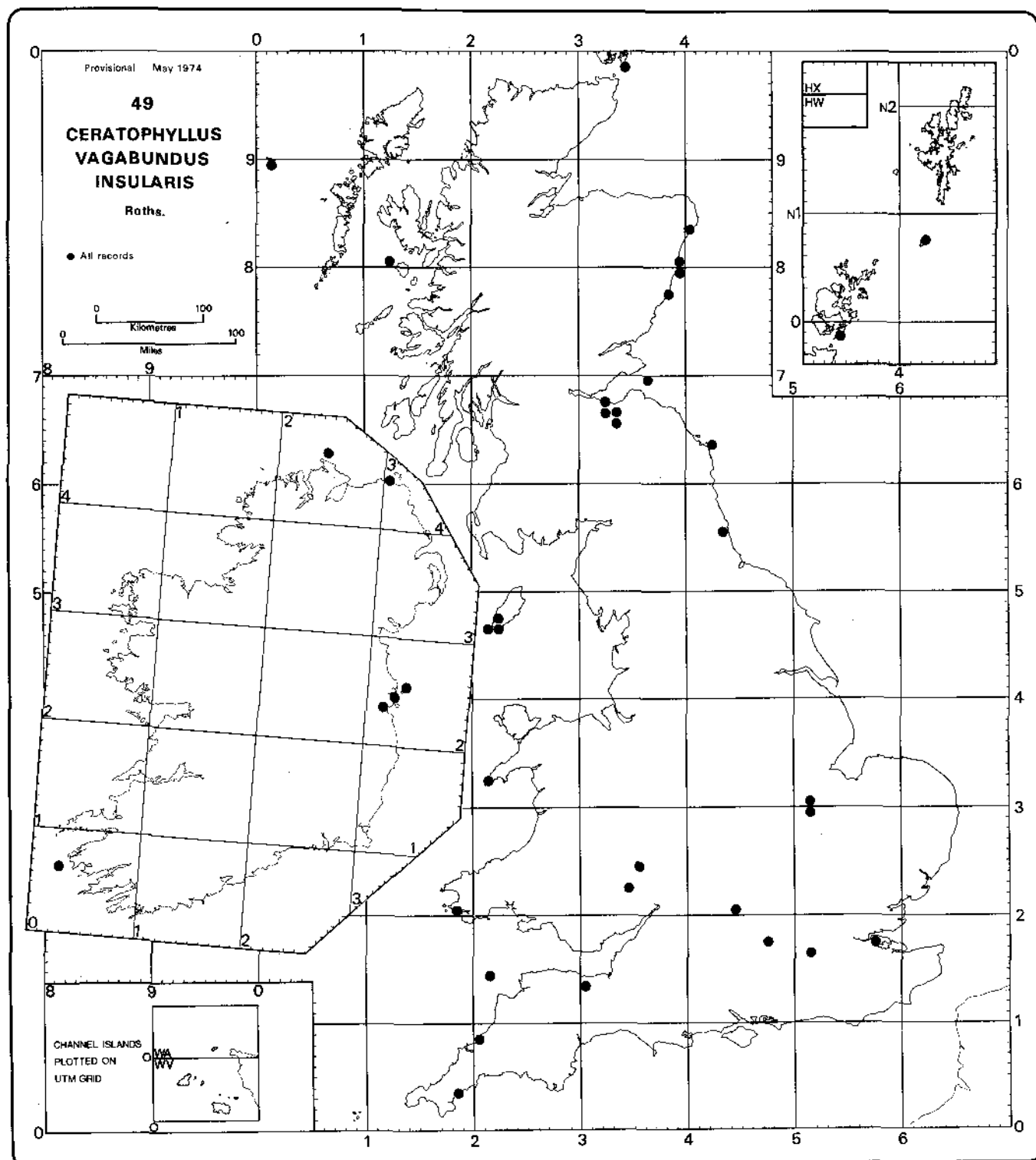


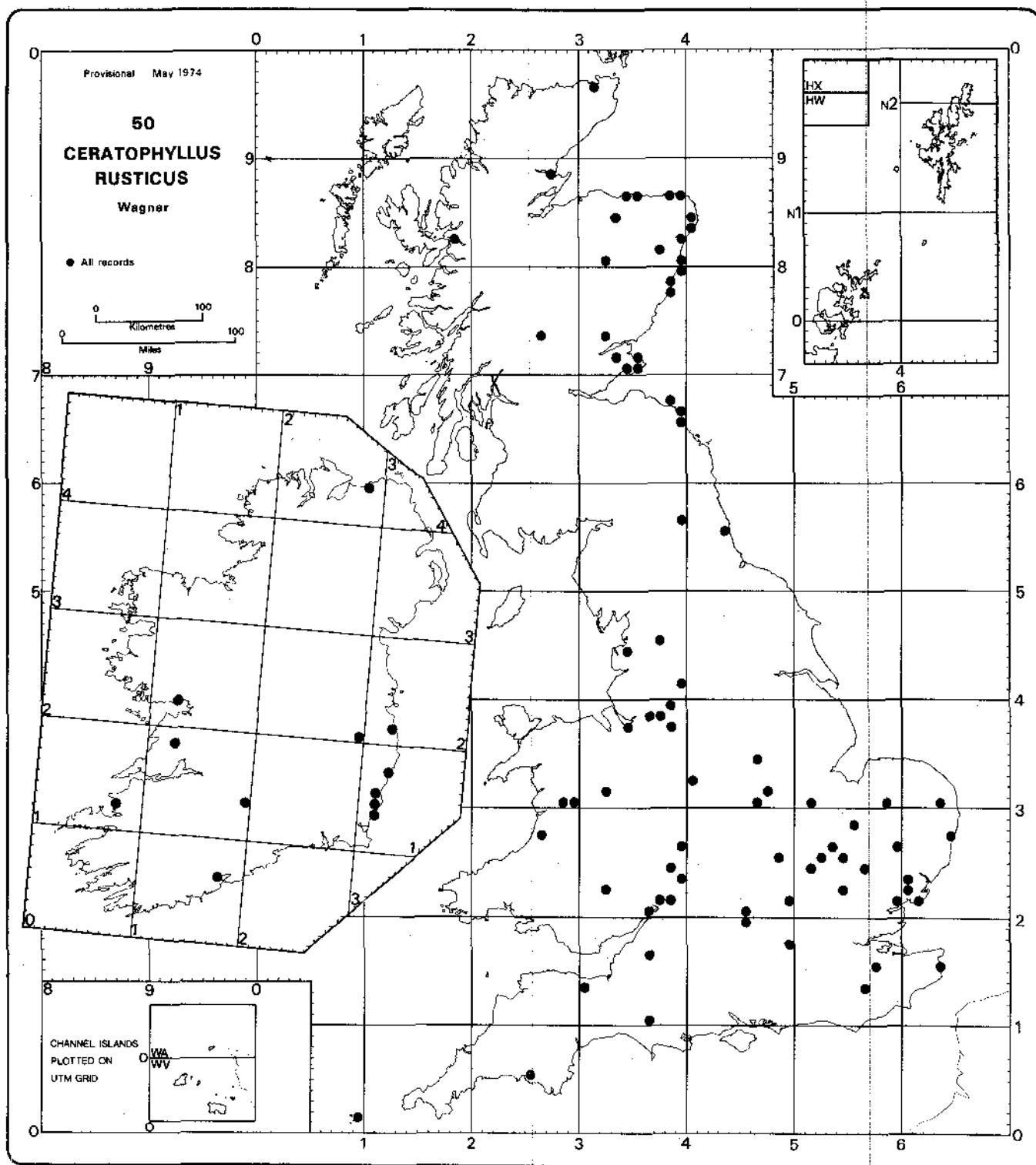


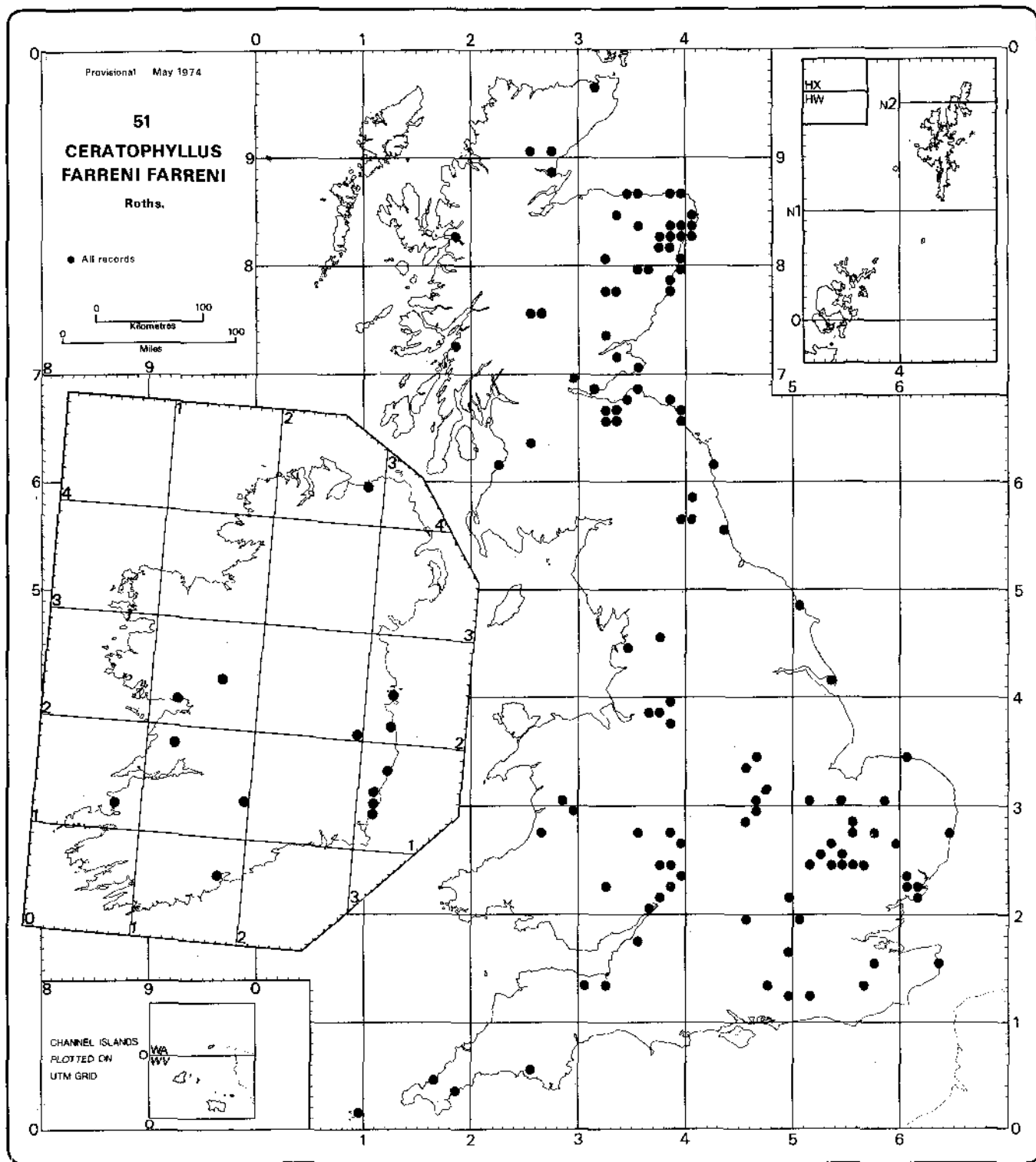


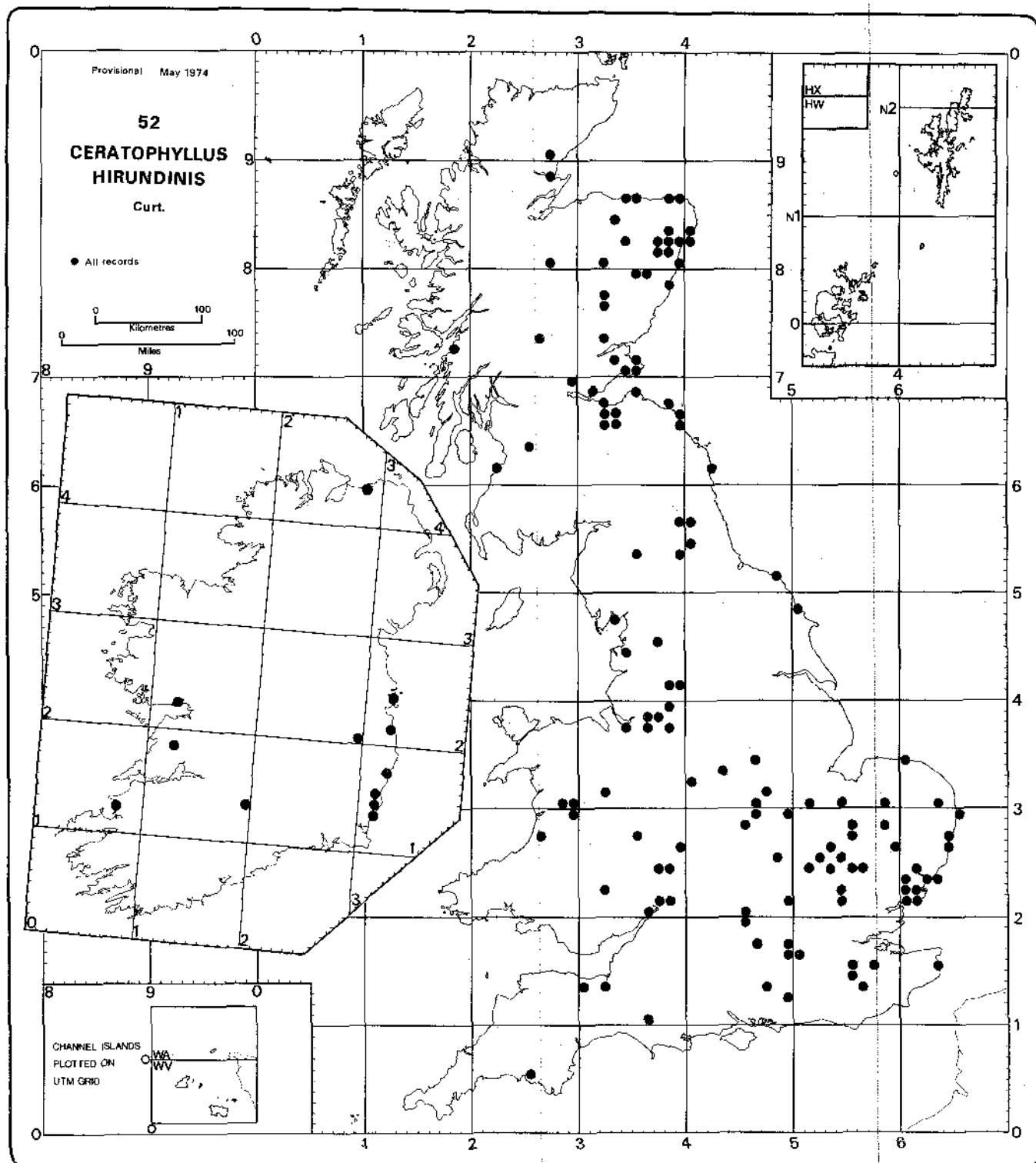


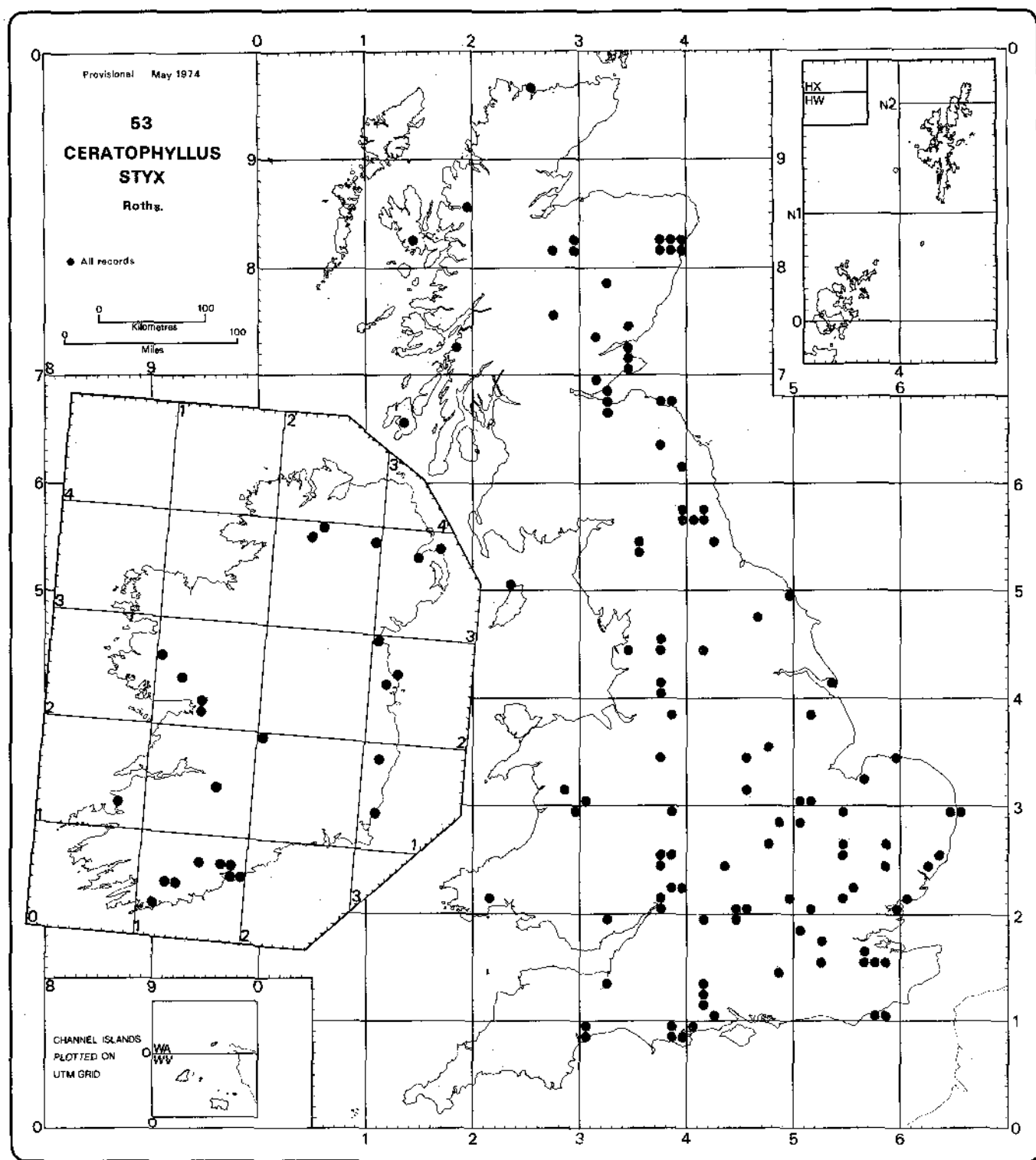


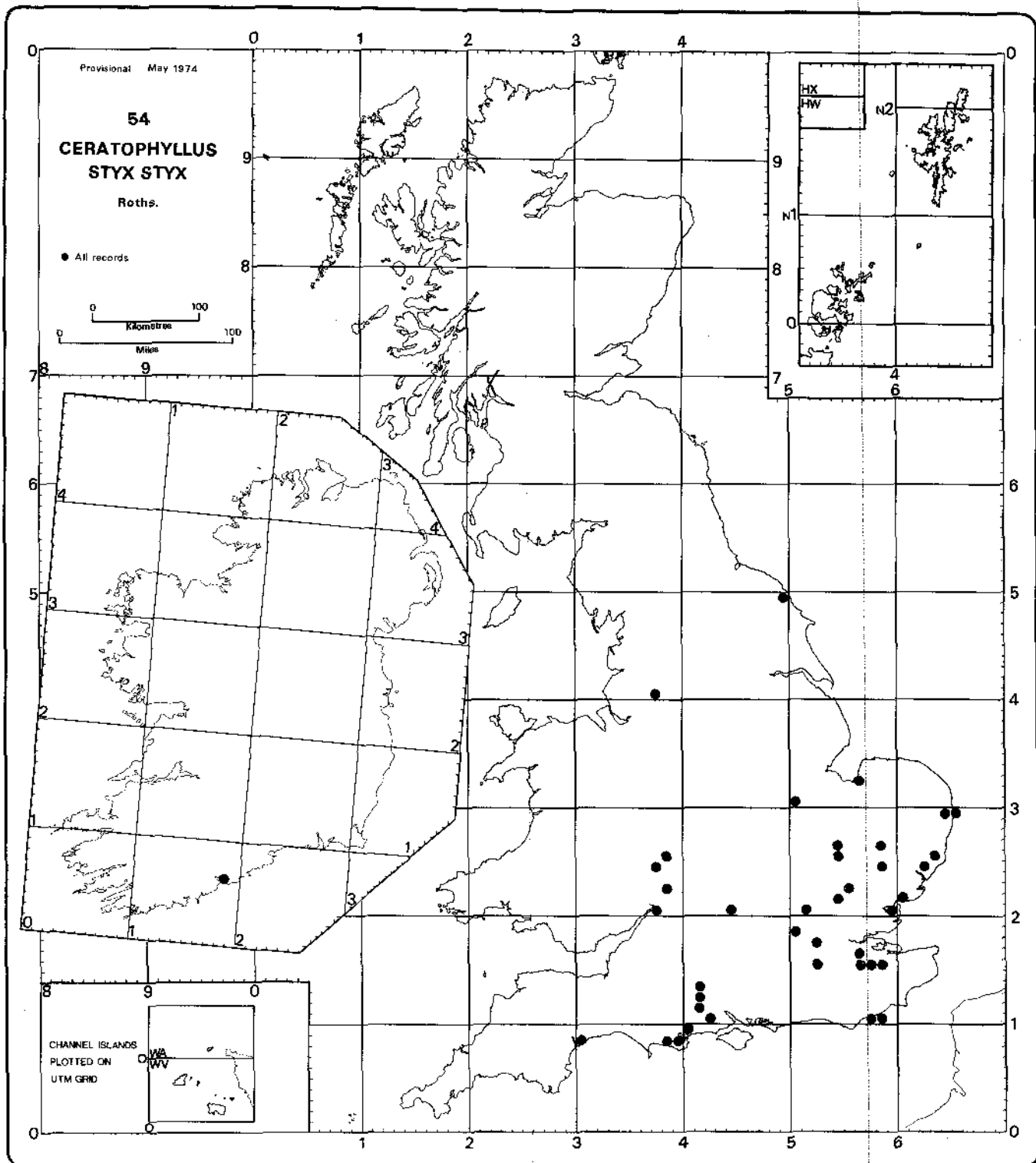


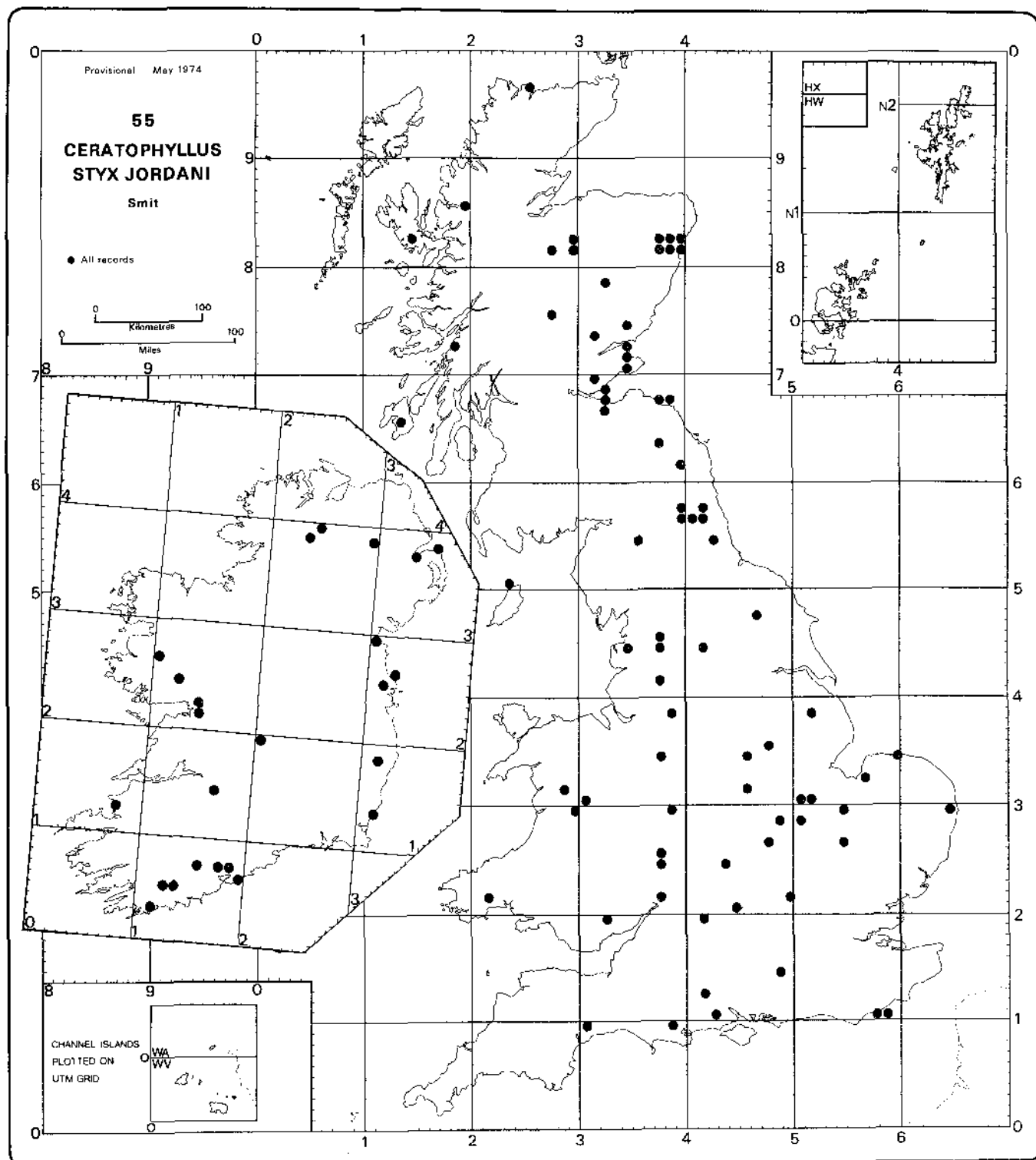


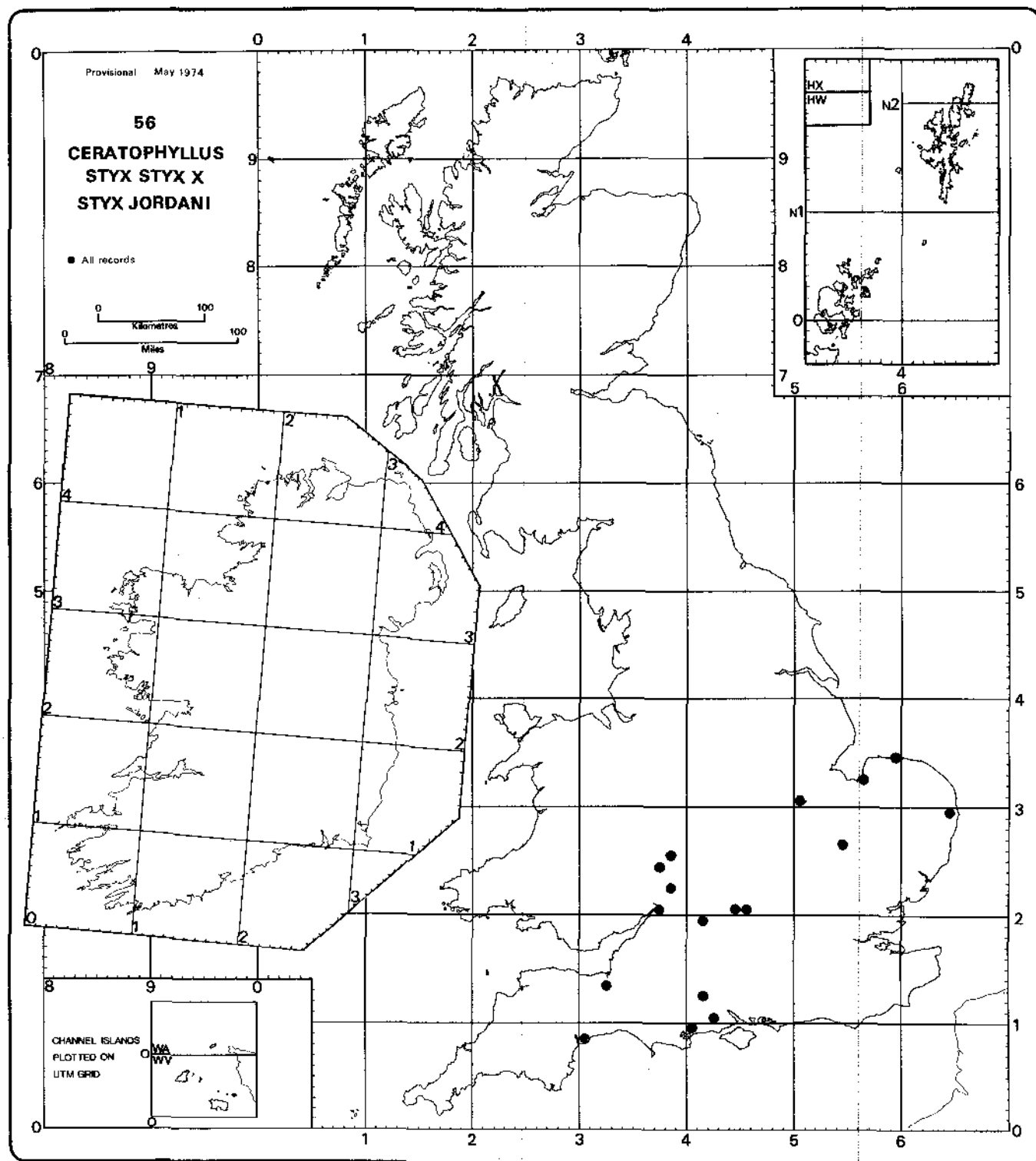


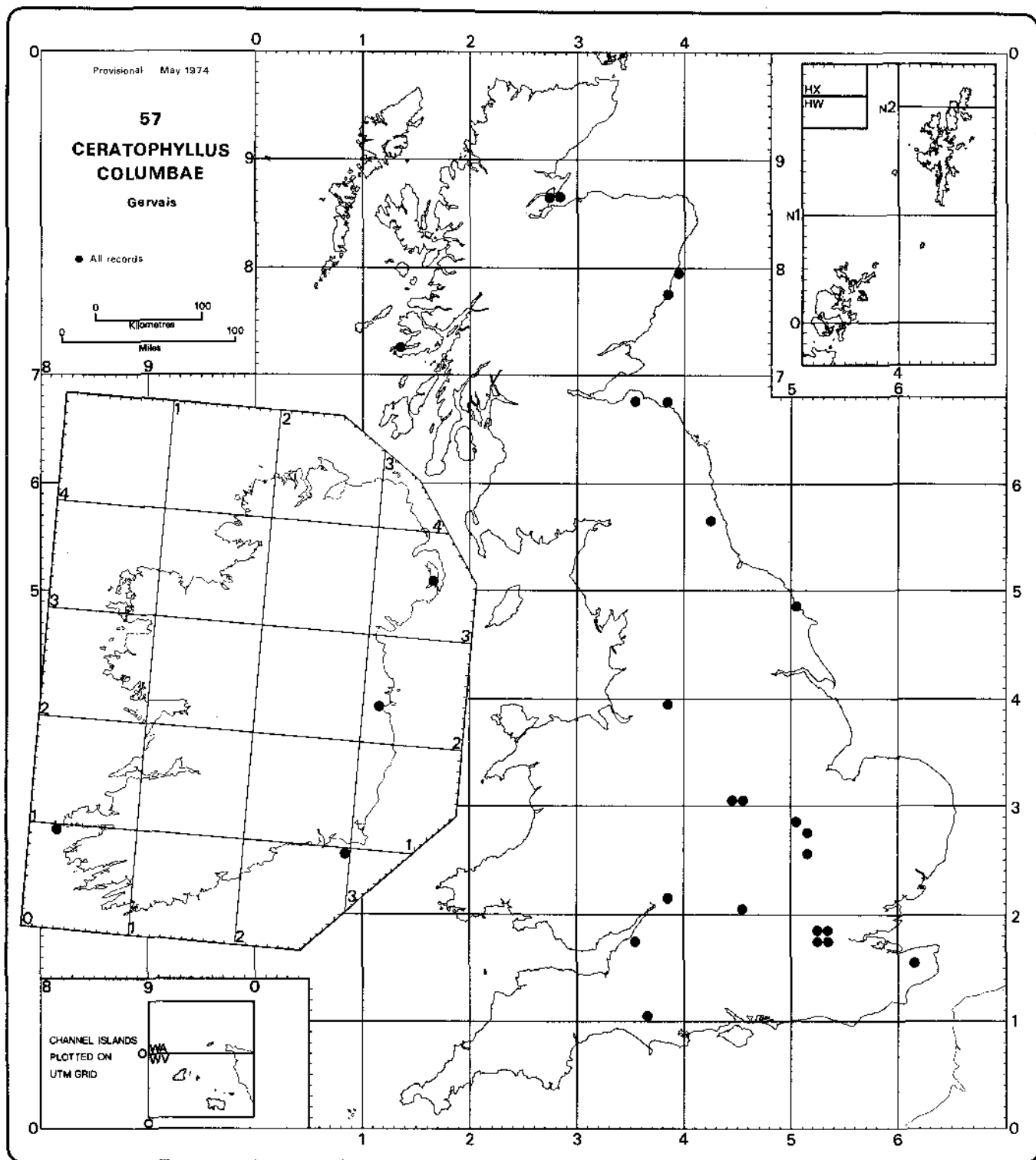


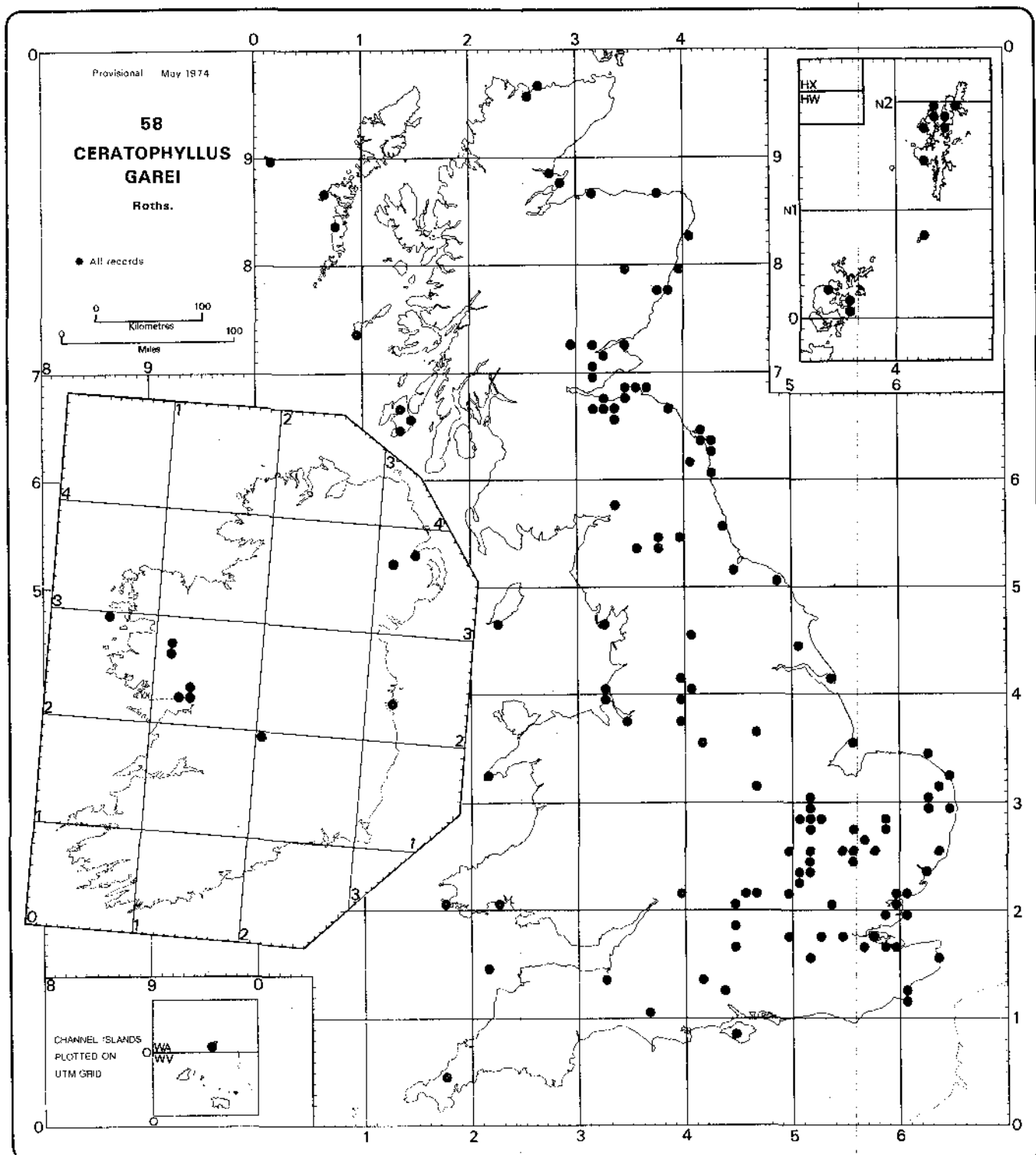


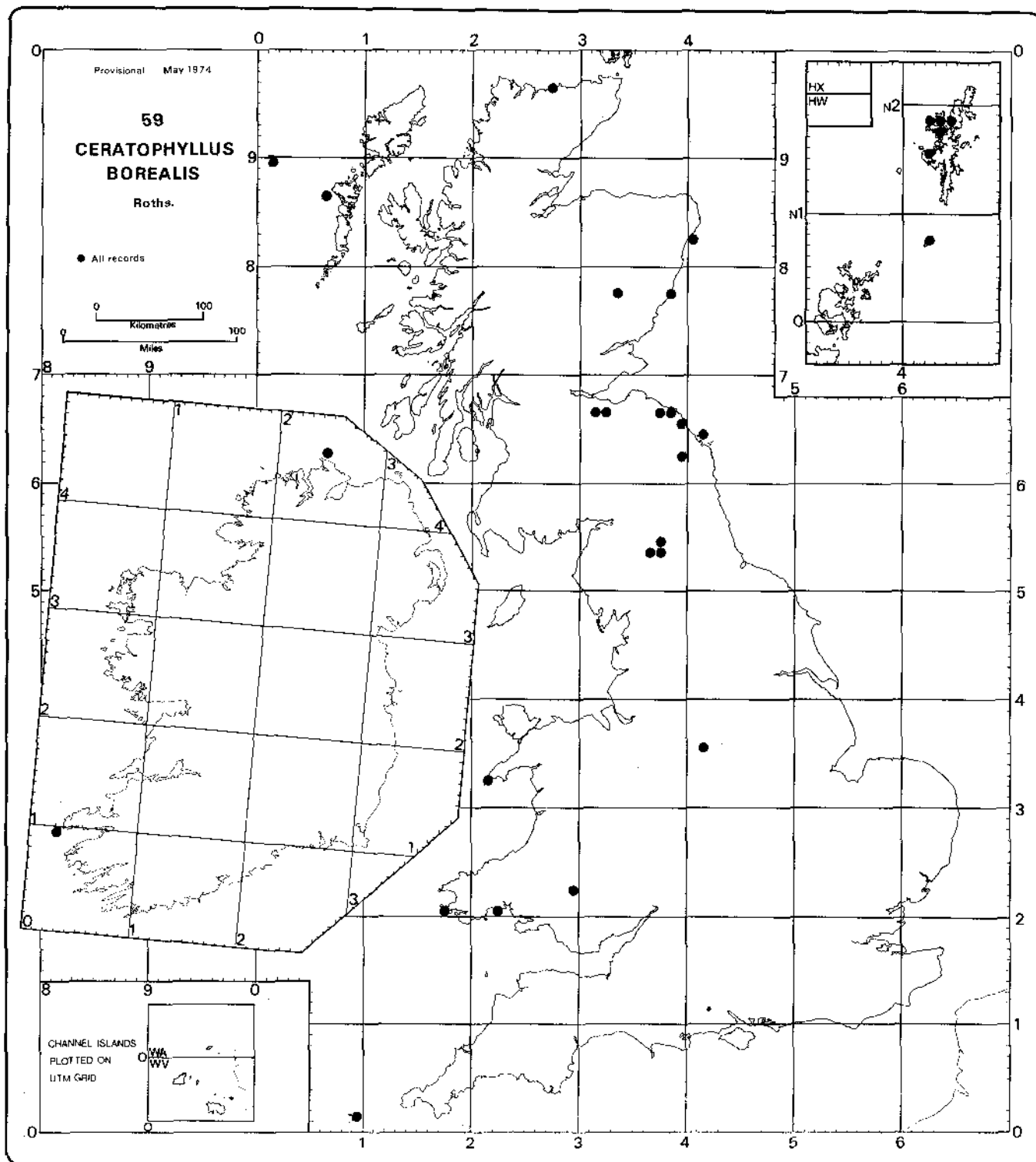


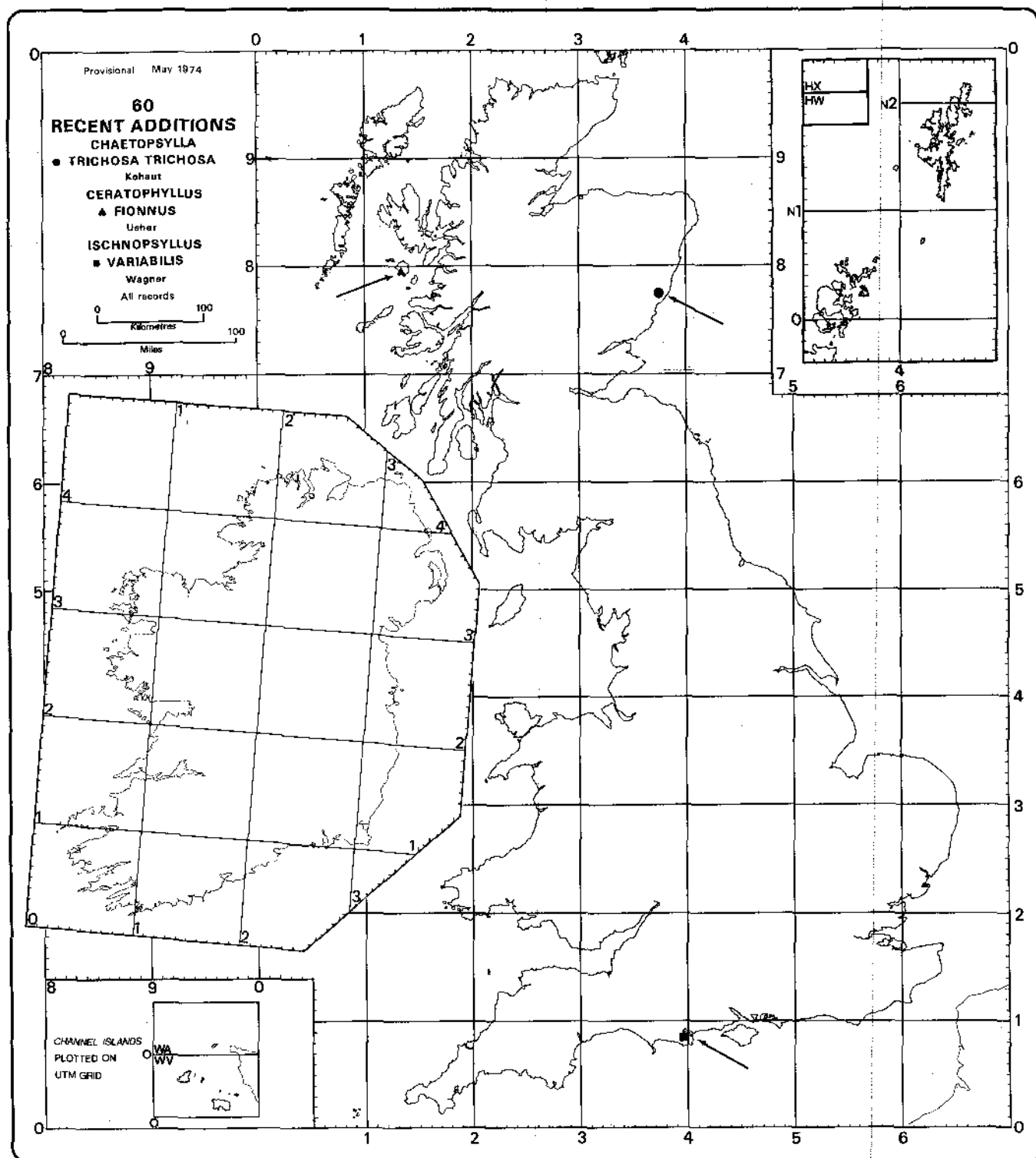












PROVISIONAL ATLAS OF THE INSECTS OF THE BRITISH ISLES

Part 4

SIPHONAPTERA

Fleas

Corrigenda:

		<u>For</u>	<u>Read</u>
p.1	1.10	after 'here', for ,	read .
p.1	1.16 up	Kolenata	Kolenati
p.5	final line	cheopin	cheopis
p.6	1.15	suqirrel	squirrel
p.6	1.15	carolensis	carolinensis
p.6	1.8 up	Oryctolgus	Oryctolagus
p.8	1.1	1738	1758
p.8	1.9	Bouche	Bouché
p.8	1.15	Bouche	Bouché
p.9	1.8	(Rothschild, 1907)	Rothschild, 1907
p.11	1.1	Map 4i Underline name	
P.11	1.9	apparantly	apparently
p.12	1.7 up	garei	<u>garei</u>

